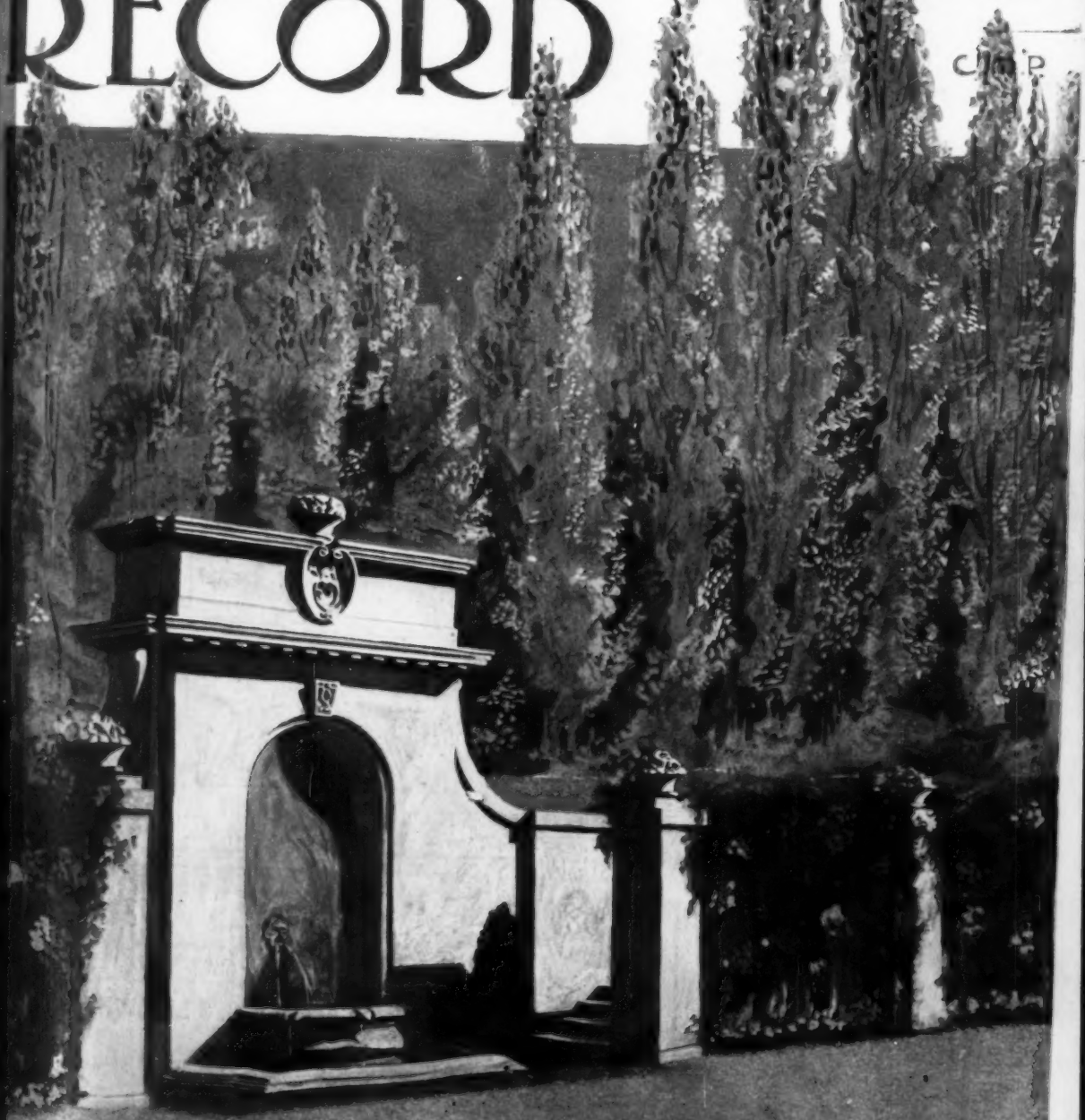
# THE ARCHITECTURAL RECORD

APRIL 1913



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HOWARD SHAW, ARCHITECT.

# THE ARCHITECTVRAL RECORD

APRIL, 1913

VOLVME XXXIII NVMBER IV


## THE RECENT WORK OF HOWARD SHAW

COVNTRY HOVSES OF THE MIDDLE WEST

*** BY A CHICAGO ARCHITECT ***

NOTES by HERBERT D. CROLY & C. MATLACK PRICE

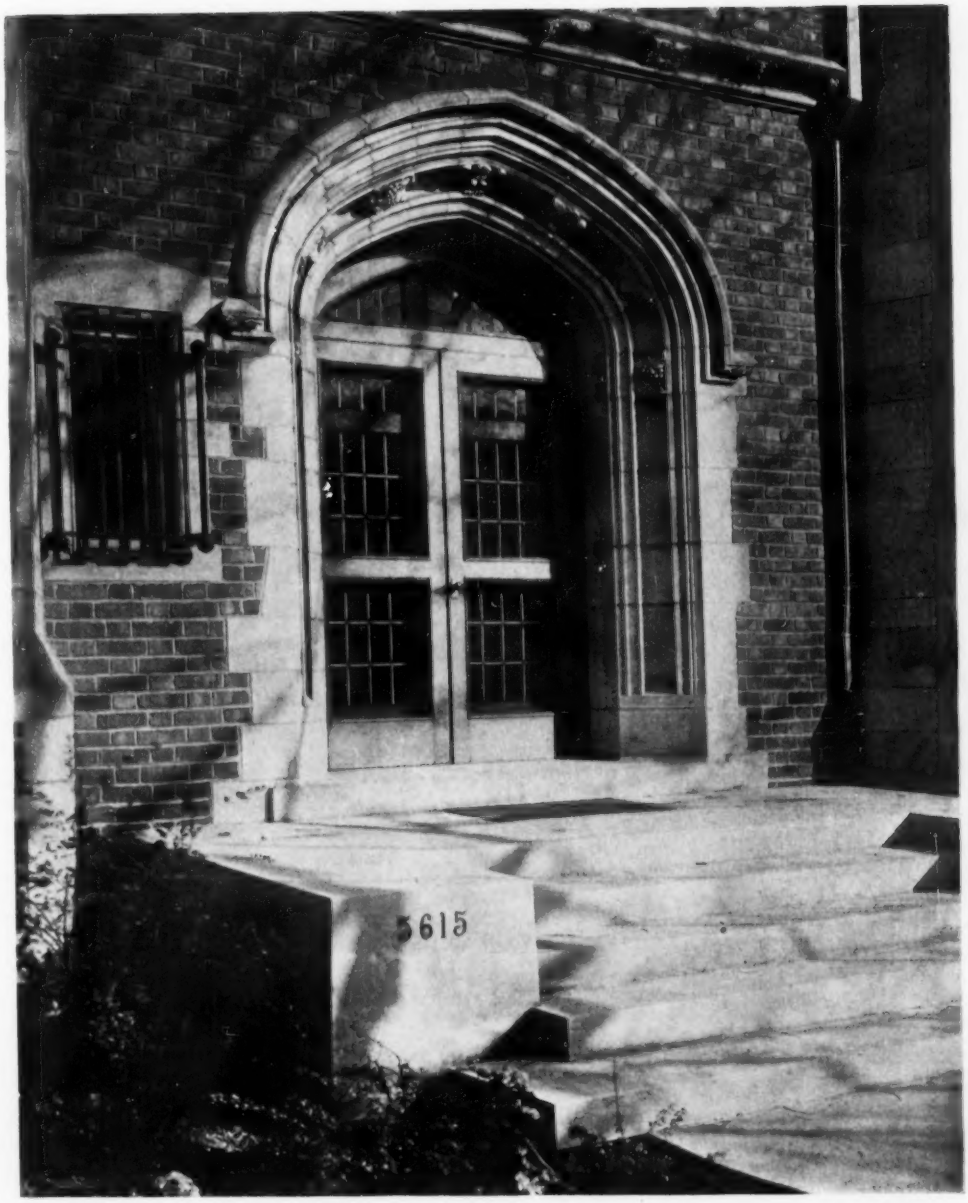
THE MAN WHO finally writes the history of American domestic architecture in the first quarter of the 20th century will be confronted by a very fascinating but a very difficult task. The task will be fascinating, because of the very large amount of really eminent and distinguished work which is being erected in almost every important geographical division of the country; but it will be difficult because of the immense variety of this work and the elusive personal and technical considerations, which have determined its character. The great variety of the work will make it impossible to classify and singularly hard to appraise. It is being produced under conditions which grant to the architects freedom from certain restrictions such as they never before enjoyed during any fruitful period of domestic architecture, while at the same time they suffer also from certain drawbacks and handicaps, for which also there is little precedent. The actual result is produced by a medley of supplementary and conflicting influences, the precise effect of which in any particular instance can rarely be disengaged and traced.

The American domestic architect in good standing certainly enjoys an unusually excellent opportunity of expressing a strongly individual point of view. The material with which he deals is in certain respects extraordinarily flexible. Instead of being limited to a single prevailing style, he can choose from among a large variety of historical models that which answers best to his own personal needs and point of view. Instead of building for a class of people, the needs and conventions of whose lives are very

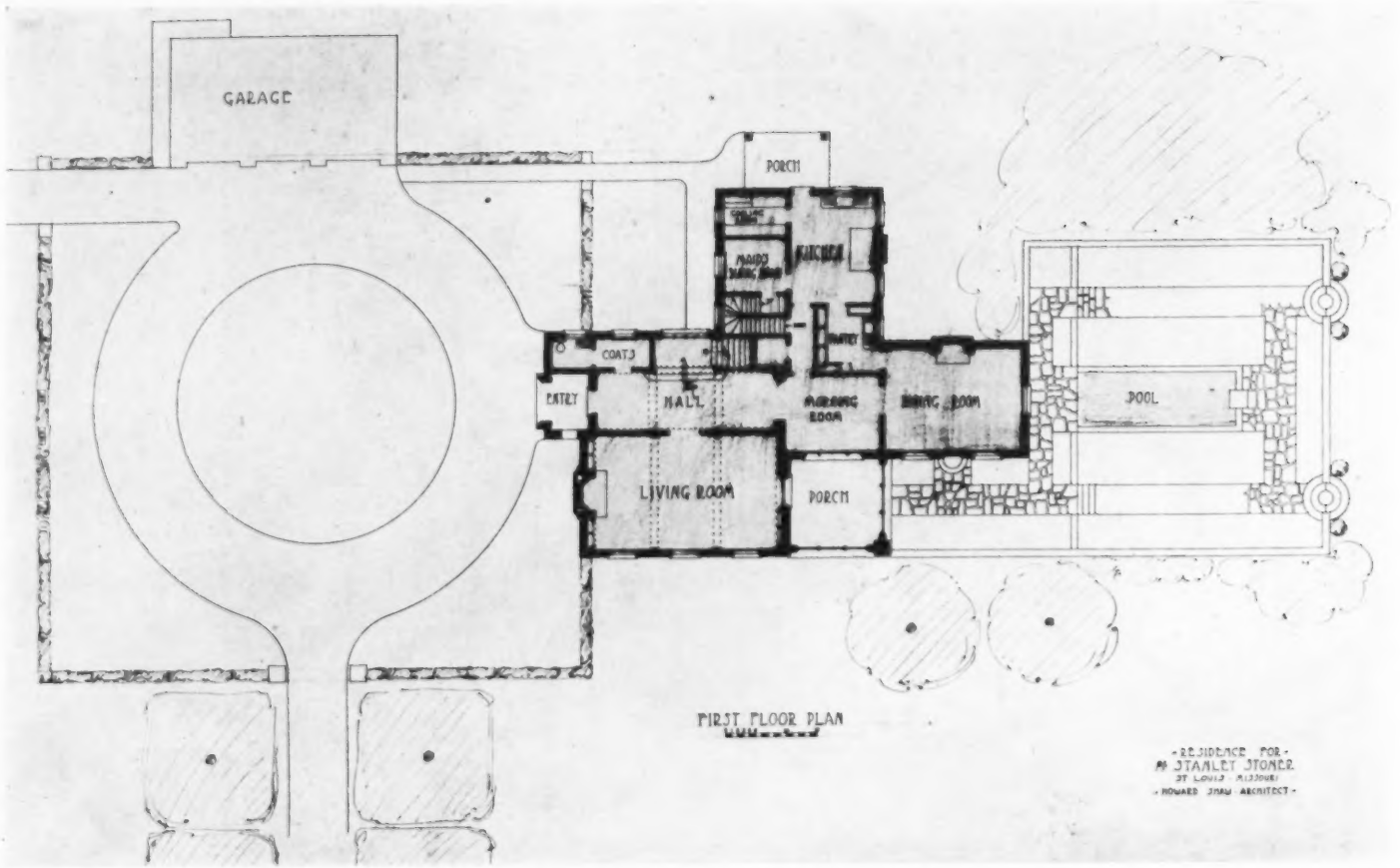
much the same he is building for families who differ enormously one from another in their standards of comfort and luxury and in the practical needs of their lives. The plan of every new house is a special problem just as much as the design.

The freedom enjoyed by the contemporary American domestic architect may seem to be as much of a danger as it is an advantage; and in certain aspects it is dangerous, but its dangers are moderated by the limits which are imposed upon possible extravagance. In the first place the eclecticism of modern American domestic architecture has not resulted in violence and disorder. It is restrained by the prevalence of increasingly high technical methods and by a constantly improving standard of popular taste. Although American architecture is more individual than ever before in its history, its individuality rarely becomes eccentric. At its best it is united with a certain freedom and scope of architectural imagination which is beginning to give us some really bold and striking examples of architectural composition, and at the other end its excesses are usually regulated by a certain refinement of taste. Moreover under the conditions which determine the design of modern American houses the individuality of the owner counts for a good deal as well as the individuality of the architect. Sometimes this influence is baleful in its effect, but when the relation between the architect and his employer is sympathetic, as is frequently the case, the effort of the owner to build a house really suitable to the life of his clients is often stimulating and results in many interesting variations from his own habitual line of work. It is this effect of the client upon the architect which constitutes the most elusive of all the influences which are determining the character of modern American houses. No one can place any estimate upon its force in any particular case except the architect himself, and apart from particular cases the extent of its power is absolutely inestimable. Yet every one, who is well acquainted with the practical conditions under which modern American dwellings are designed, knows how de-

RESIDENCE OF B. E. BENSINGER, ESQ., GLENCOE, ILL.
Howard Shaw, Architect.

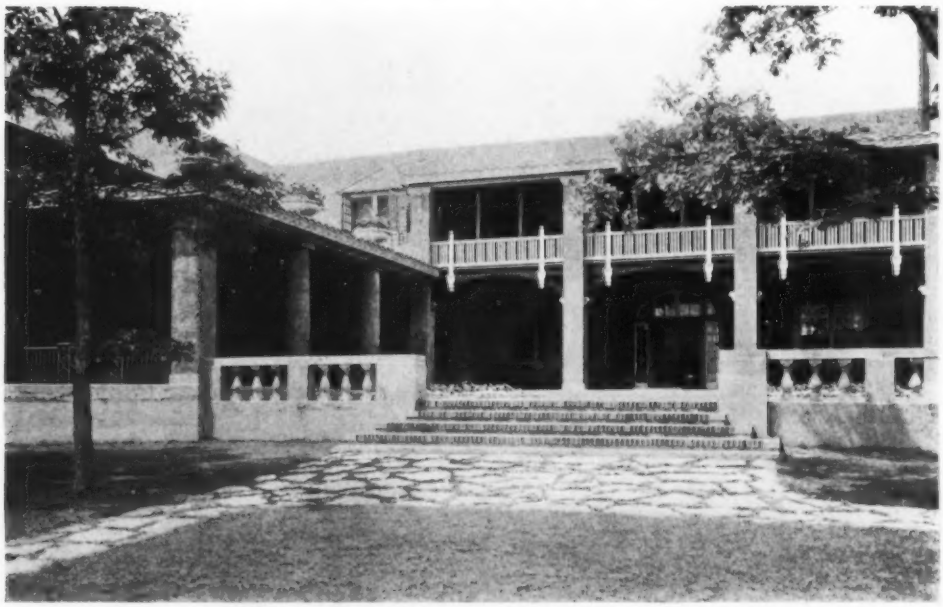



ENTRANCE DETAIL, RESIDENCE OF
DR. B. W. SIPPY, CHICAGO, ILL.
HOWARD SHAW, ARCHITECT.




PLAN OF THE RESIDENCE OF STANLEY STONER, ESQ.,
ST. LOUIS, MO. HOWARD SHAW, ARCHITECT.

RESIDENCE OF STANLEY STONER, ESQ., ST. LOUIS, MO.
HOWARD SHAW, ARCHITECT.



REAR OF THE LAKE SHORE COUNTRY CLUB, GLENCOE, ILL.
Howard Shaw, Architect.

cisive the influence of the client has been in determining the appearance of certain very successful houses.

A prudent historian and critic will not consequently attempt to force modern American dwellings into any rigid or comprehensive classes. The merely accidental personal element in their appearance is of enormous importance and accounts for much of the fascination of their total effect. The extraordinary thing is that they can be so varied and yet so congruous, that they can combine so much individuality with so much propriety. The art of architecture must be practiced under conditions which are not only unprecedented but thoroughly sound. If they were not sound there would be a much larger infusion of meaningless eccentricity in the final result.

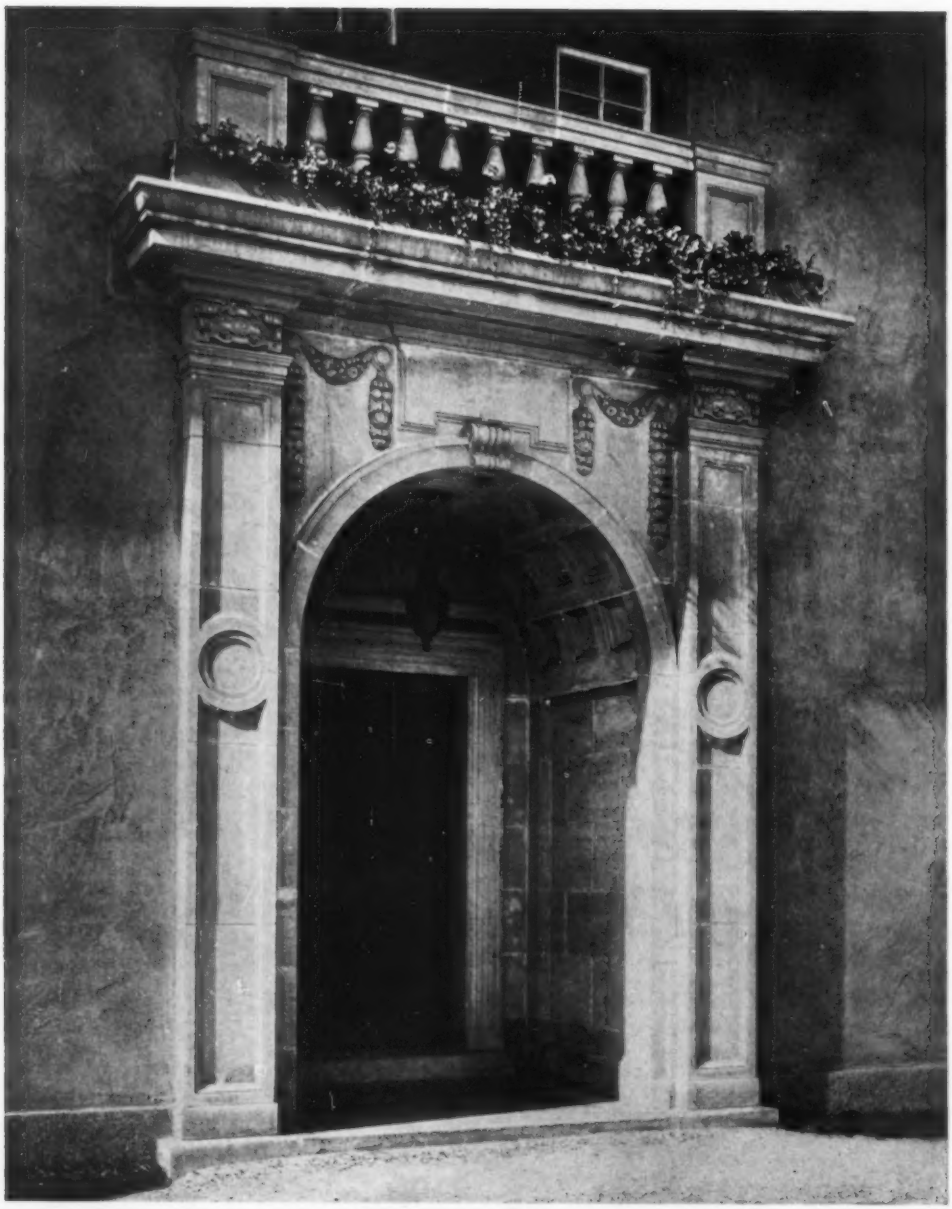
Among contemporary American architects, who have designed more residences than any other class of buildings, there are few whose work is more representative of certain generally prevailing tendencies than Mr. Howard Shaw, of Chicago. Mr. Shaw is in the first place an eclectic but only within certain moderate limits. He is perhaps more of an eclectic than those of his colleagues in New York and Boston, who stand parallel with him in their own communities as residential architects; but he is far less of an eclectic than were many American designers of the preceding generation. There was a time when an architect was a learned man who was supposed to have enough knowledge to furnish correct copies of any historical style. The modern eclectic does not pretend to be correct in his derivations. He borrows motives rather than specific forms, and if there is anything which he particularly desires to avoid, it is the slightest suggestion of pedantry. This is the sense and the way in which Mr. Shaw is an eclectic. One can trace in his work the influence of many different historic styles, but there is not the slightest hint of any literal copying. It is frequently difficult to say whether any particular house belongs more specifically to an early or late phase of any particular style. In some instances it is even difficult to assign to his houses any pedigree at all. While there is a palpable traditional element in the work, the tradition is decid-

edly less specific than it would be in the case of the majority of his equally successful contemporaries.

In the case of Mr. Shaw eclecticism has, perhaps, been carried a little too far. When one tries to define the salient motives of Mr. Shaw's method of design, one is confronted by a puzzling task. The presence in his work of a vigorous individual quality is unmistakable; but when the attempt is made to seize and describe it the quality proves to be elusive. His eclecticism has not the slightest tendency towards eccentricity except in the use of certain details, but it does tend to be a little miscellaneous. The individual quality in his work would count for more in case it expressed itself in more decided preferences, which were carried to more consistent conclusions. It is partly dissipated by its own methods of expression. If it had received a more specific technical expression it would make a more powerful effect.

Because of its tendency to be somewhat miscellaneous, Mr. Shaw's work is peculiarly representative of certain dominant characteristics of American domestic architecture as a whole. Its miscellaneous quality is the result of prevailing practical conditions, which press rather more heavily upon an architect in the Middle West than in the East. In the first place Mr. Shaw is extraordinarily popular. The number of houses which he designs would be astounding to the architect of any European country, and it is sufficiently rare in this country. Under such conditions the fortuitous element in the design of each particular house tends to increase, and the individuality of the client necessarily plays a very important part in determining the result. Mr. Shaw's success is a good deal due to the fact that he is able to give to his clients what they want, while at the same time designing houses that are always individual and often charming and distinguished. The ability to please one's cli-

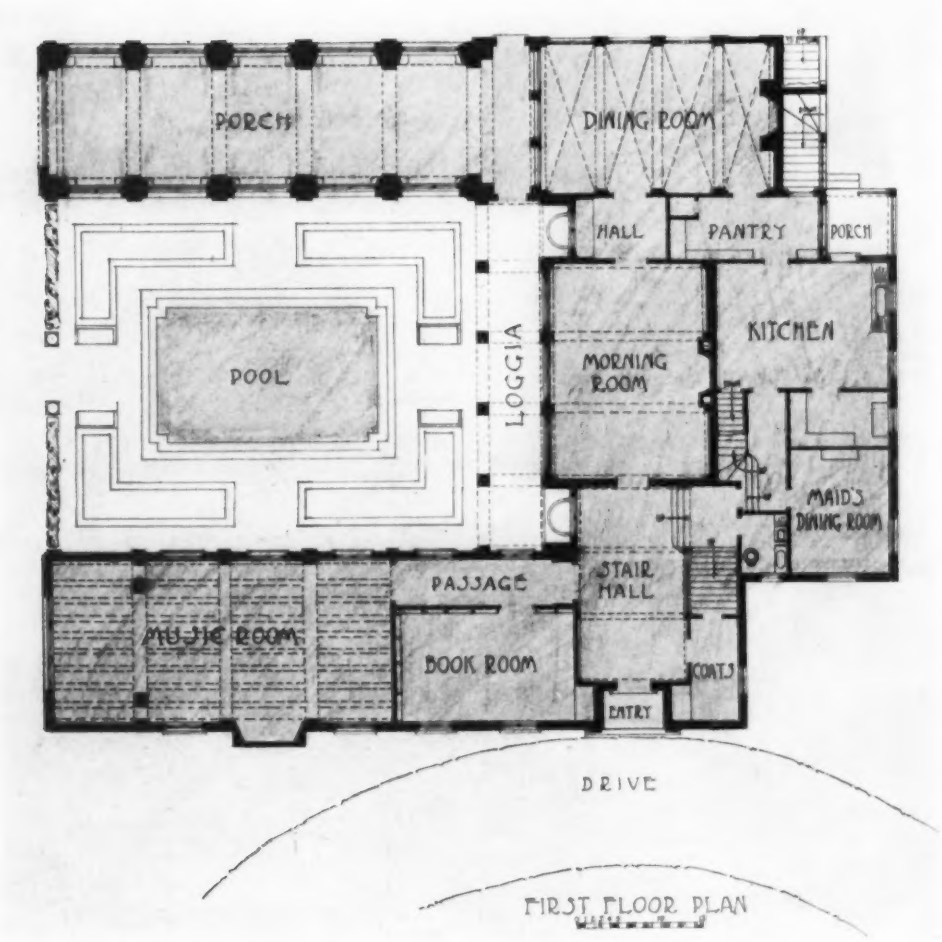
RESIDENCE OF H. H. HILTON, ESQ., CHICAGO, ILL.
Howard Shaw, Architect.



DETAIL OF DOOR—RESIDENCE OF E. NORMAN SCOTT, ESQ., LAKE FOREST, ILL.
HOWARD SHAW, ARCHITECT.

RESIDENCE OF E. NORMAN SCOTT, ESQ., LAKE FOREST, ILL.
Howard Shaw, Architect.

RESIDENCE OF T. E. DONNELLY, ESQ., LAKE FOREST, ILL.
Howard Shaw, Architect.




PLAN OF THE RESIDENCE OF E. NORMAN SCOTT, ESQ., LAKE FOREST, ILL.
Howard Shaw, Architect.

ents and the ability to assist one's own architectural individuality in a consistent way are not always compatible; and some of the miscellaneous character of Mr. Shaw's work is the result of this incompatibility. The class of people for whom Mr. Shaw builds is exceptionally good. The prosperous business and professional man of the Middle West and his family are very real people. They usually have decided preferences both in the arrangement and the appearance of their houses; and these preferences are more apt to be the result of desires and tastes, which an architect is bound to respect, than is frequently the case with the corresponding class in the East. But of course when these somewhat miscellaneous needs and tastes are an important factor in determining the appearance of a group of houses the houses necessarily become difficult to classify. They have a little of the effect of a collection of pictures by different painters of the same school instead of a collection of pictures, which are the handiwork of one man.

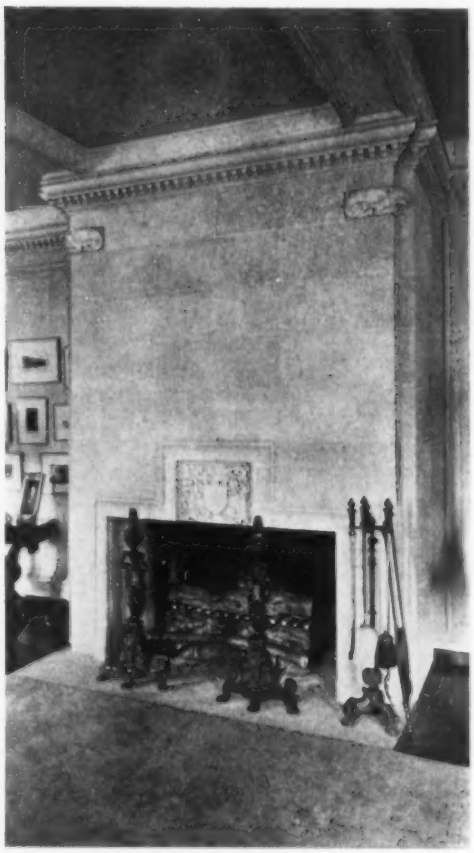
The concluding statement of the last paragraph is, however, an exaggeration. Mr. Shaw's architectural individuality does not obtain a sufficiently consistent vehicle of expression, but it is vigorous and it is usually palpable. Mr. Shaw likes

RESIDENCE OF E. NORMAN SCOTT, ESQ.,
LAKE FOREST, ILL. HOWARD SHAW, ARCHITECT.

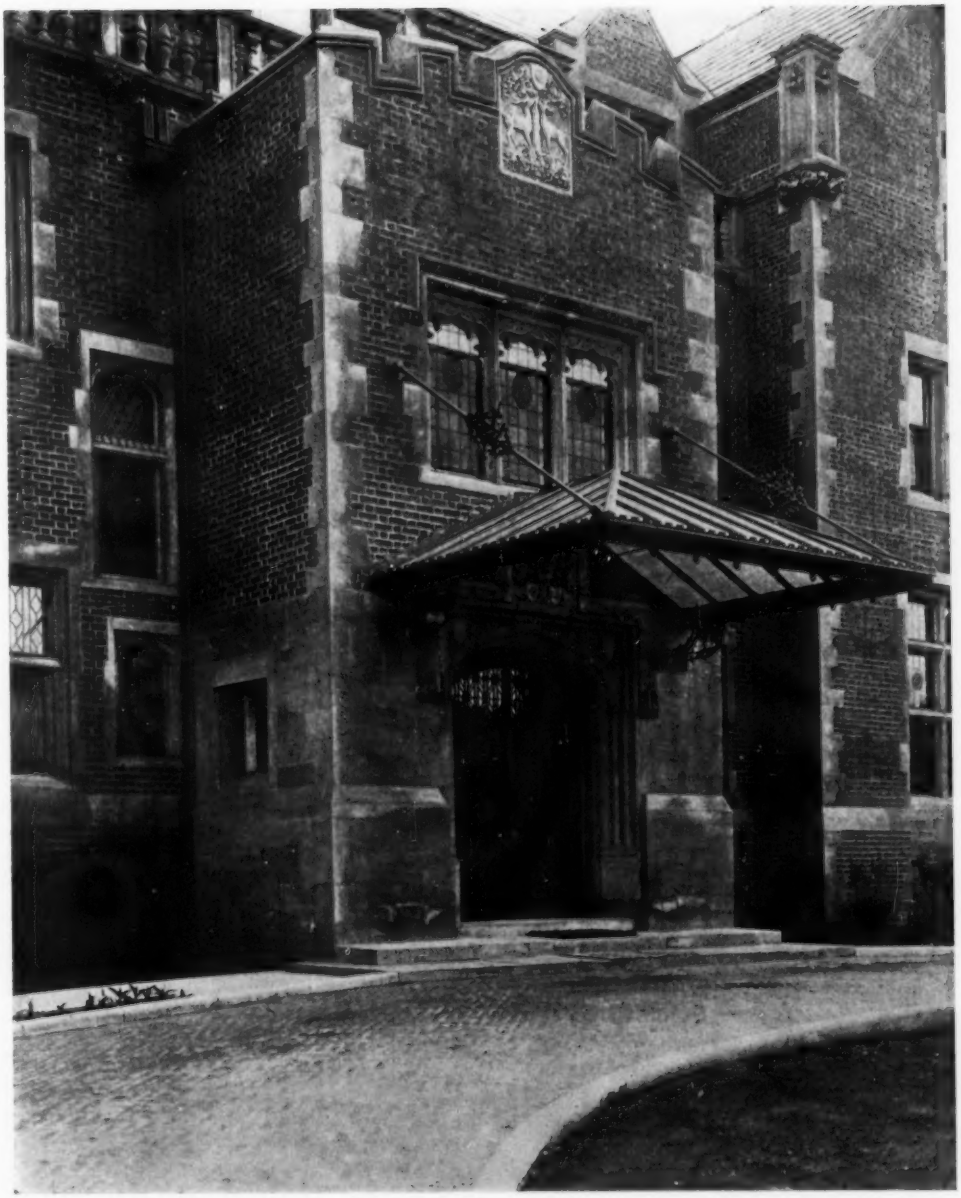
THE HALL—RESIDENCE OF HUGH J. McBIRNEY, LAKE FOREST, ILL.
Howard Shaw, Architect.

the more sturdy and substantial architectural characteristics. One does not find in his buildings much refinement of line or much carefully wrought and delicate detail, but one almost always finds an effective general idea which is vigorously expressed in a well-composed mass, and this vitality, as well as his ability to satisfy his clients, is partly the secret of his success. His clients, while they dislike any suggestion of violence or coarseness, decidedly prefer an expression of force in their buildings rather than expression of distinction or mere daintiness, and in this preference they are most assuredly right. The better American architecture errs rather on the side of excessive refinement than of excessive power: and it is refreshing to look at the house of an architect like Mr. Shaw, who is always positive and vigorous—even if this positive quality is sometimes dissipated by its detailed embodiment.

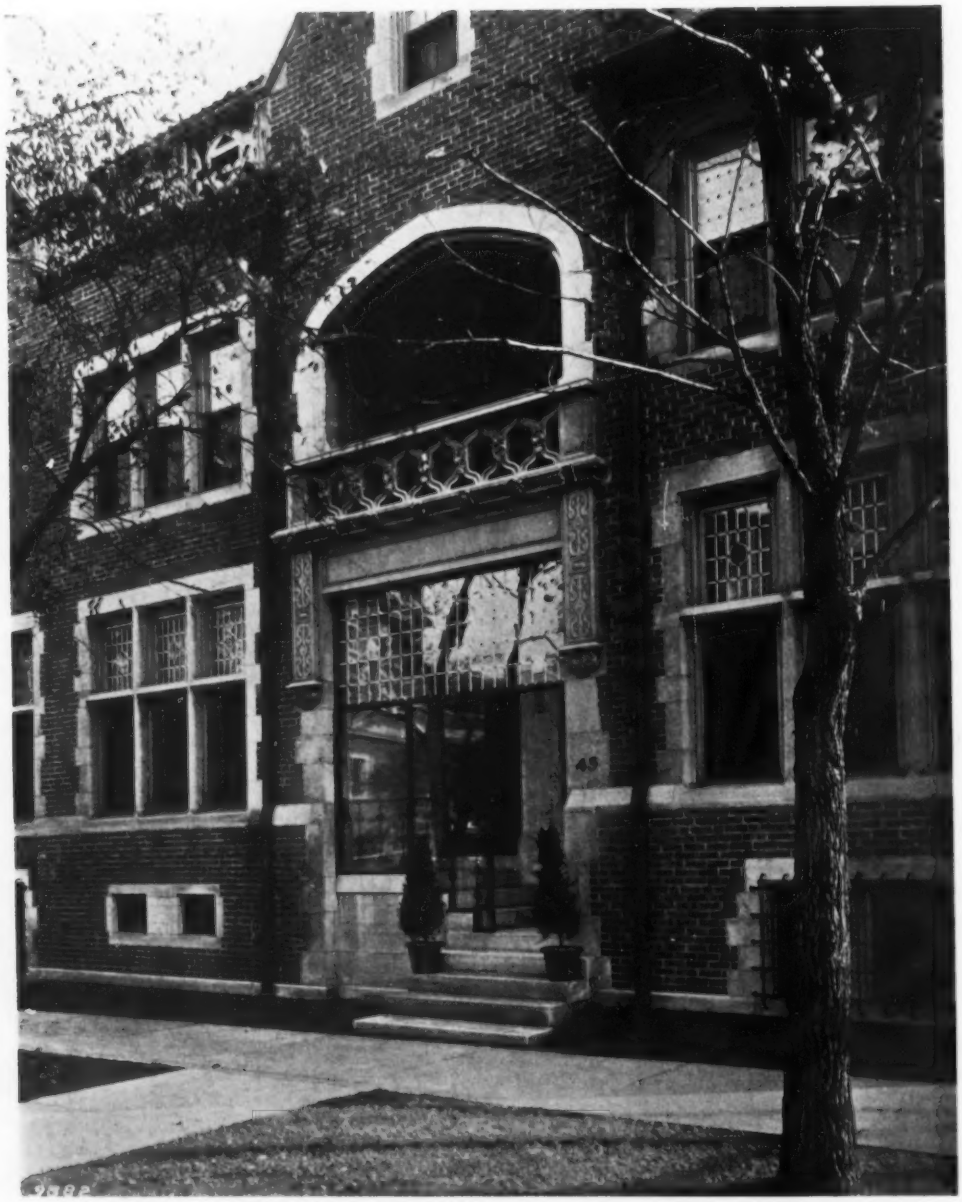
Another merit of Mr. Shaw's houses, which accounts for the success of their designer is their almost uniformly homely and livable quality. This is a merit, upon which Americans are coming more and more to insist, and which American architects are becoming more and more capable of achieving. There was a period about fifteen years ago, when the more expensive houses built in this country seemed to tend to embody the French ideal of impersonality; but such is no longer the case even with the big show places, and it never was the case with the more modest dwellings. Of course many handsome houses are still built, whose appearance seems to be determined by a desire upon the part of the owner to be socially correct and a desire on the part of the designer to be architecturally correct. But these houses are not typical. Almost every American architect, who has succeeded in making a considerable reputation for residential work, has possessed the gift of making his houses in-



FIREPLACE—RESIDENCE OF FINLEY BARRELL, ESQ., LAKE FOREST, ILL.
Howard Shaw, Architect.



ENTRANCE DETAIL, RESIDENCE OF EDWARD MORRIS, ESQ., CHICAGO, ILL. HOWARD SHAW, ARCHITECT.



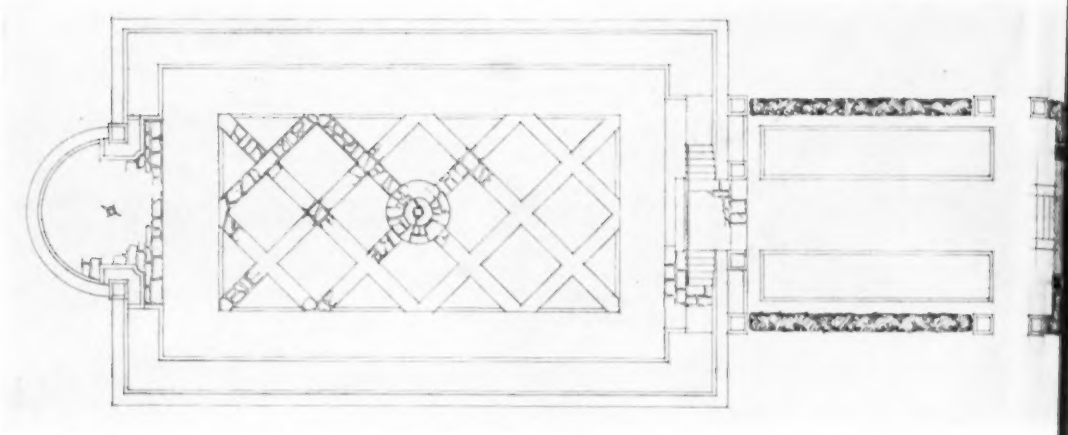
ENTRANCE DETAIL, RESIDENCE OF
PETER FORTUNE, ESQ., CHICAGO, ILL.
HOWARD SHAW, ARCHITECT.

dividual and livable. This was true even of Stanford White, and it is still more true of his successors in the same tradition, such as Platt, Pope, Bigelow, Heun, Wilson, Eyre and many others. Our domestic architecture is allied in this respect with the English tradition, and this in spite of the fact that it is also seeking a certain purity of style which English domestic architecture never achieved except within a very limited range.

Mr. Shaw's houses possess to a very considerable extent the merit of being thoroughly livable. In this respect he adheres more closely to the English tradition than do the majority of his contemporaries. Even when least impeccable from the point of view of design, one of his houses will always look pleasant and personal. His ability to obtain this effect is probably closely associated with his ability to please his clients. It is a tribute as much to the man as to the designer. He can see his houses in a certain human relationship; or rather he can usually see his clients in a certain appropriate architectural background. His eyes are not glued to the draughting board. The designing of buildings is to him a human matter as well as a professional and a technical matter. The consequence is that in his better buildings Mr. Shaw reaches a very high level of personal achievement. These houses are charming and inviting to a degree rarely exceeded in American domestic architecture—a fact which justifies Mr. Shaw's success as well as accounts for it. A man who can design dwellings which look so attractive to live in, as certain of the dwellings illustrated herewith, can be forgiven a far heavier burden of architectural misdemeanor than Mr. Shaw bears upon his shoulders.

The particular group of houses, illustrated herewith, exhibits all phases of Mr. Shaw's work. It contains some of the best residences which he has ever designed as well as some that do him much

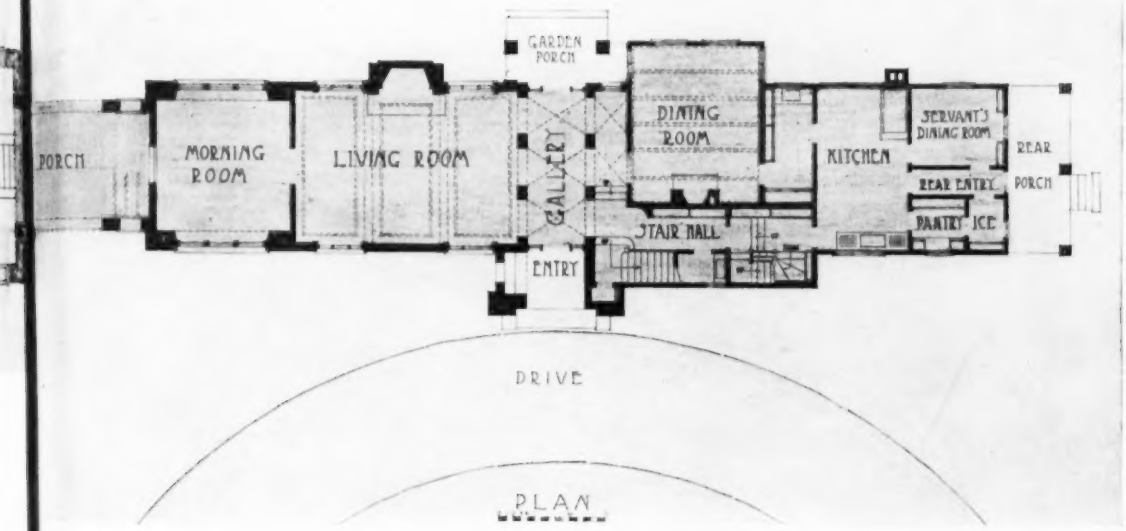
RESIDENCE OF L. B. KUPPENHEIMER, ESQ., GLENCOE, ILL.
Howard Shaw, Architect.



GARDEN AND HOUSE PLAN—RESIDENCE OF HUGH J. McBIRNEY, ESQ., LAKE FOREST, ILL.
Howard Shaw, Architect.

less credit. But in every instance of the better work, there is some minor imperfection or incongruity which injures the integrity of the design, while there is not one of the inferior houses that does not betray the presence of real force on the part of the designer. The general impression one gets is that of watching a rather mixed assemblage of people, who are on the whole interesting and vigorous, but who could have with advantage been submitted to a more exacting standard of selection. It should be added, however, that if the standard of selection had been higher, the result might have been more artificial and less individual. Mr. Shaw is not one of those men who imposes standards upon his clients very much higher than they are prepared to receive; but he does take advantage of every opening afforded by his clientele to do sound and good work. The consequence is that while he has not been a strong formative influence among his following and in his community, the effect of his work has been highly beneficial. It is all the better understood and all the more convincing, because people do not have to strain themselves in order to climb to the required level.

RESIDENCE OF HUGH J. McBIRNEY, ESQ., LAKE FOREST, ILL.
Howard Shaw, Architect.




These residences exhibit a very considerable variety of plan and style. At one end there are several houses whose motive has been derived from a late phase of Jacobean. At the other end there are a couple of instances of façades which are much more Italian than anything else. Between these two extremes there are various intermediate phases, chiefly of rather vague English renaissance parentage, but none of them of unexceptional pedigree. Mr. Shaw is nothing less than doctrinaire or pedantic. He designs individual houses for particular clients, and borrows from anyone or any number of sources as much or as little as he pleases. But wide as is the range of his sources it has significant limits. He rarely gets too far away from the English renaissance. He eschews or at least sedulously neglects Tudor and Elizabethan sources; and he will have no dealings with frog-eating Frenchmen. Few contemporary American architects

RESIDENCE OF HUGH J. McBIRNEY, ESQ., LAKE FOREST, ILL.
**Howard Shaw, Architect.**

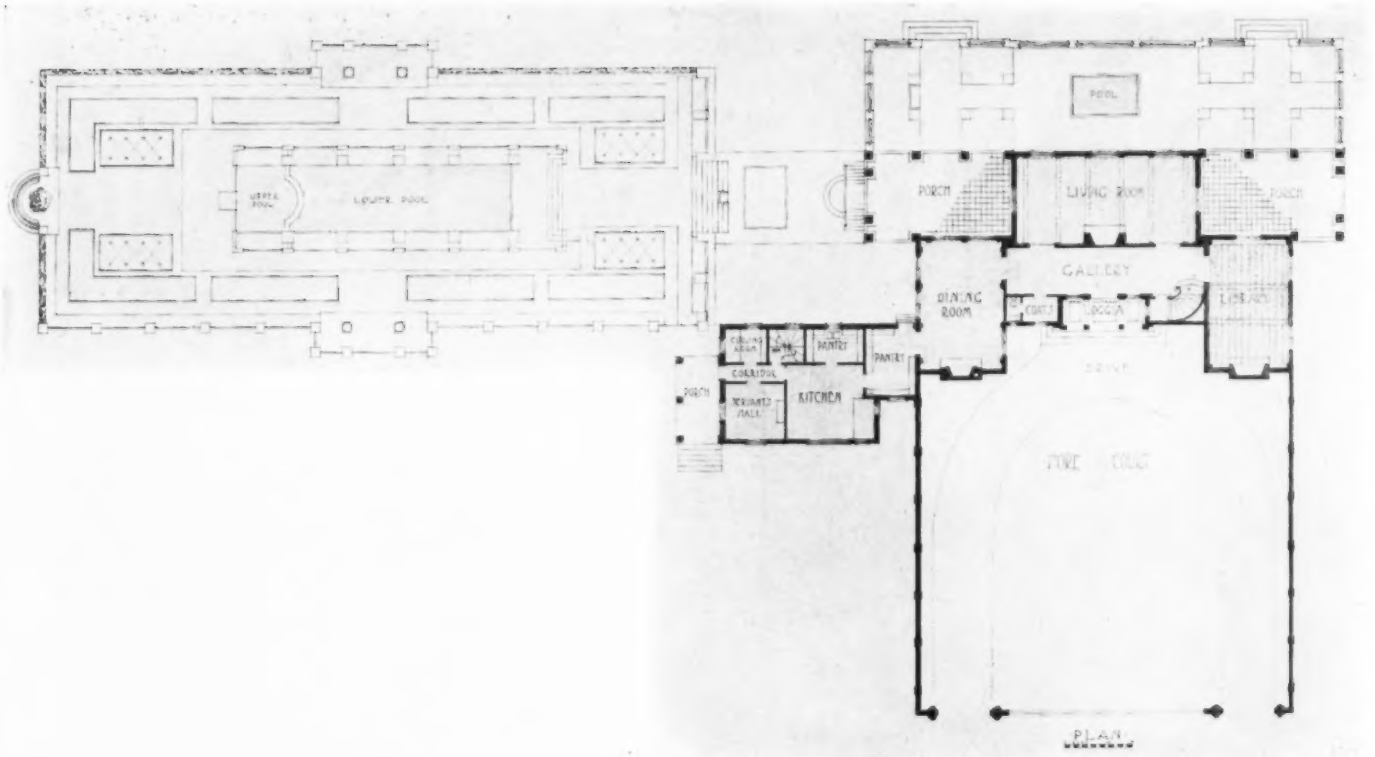
of similar standing are so entirely free from French influence as he is. Even his Italian excursions are made in English or American company, and are not based upon any fresh or original interest in Italian domestic architecture. Mr. Shaw is fundamentally English, but with his English tendencies molded to meet contemporary American standards, conditions and needs. And in this respect he is representative of his own community. Considering the number of Americans who have studied in Paris, or whose instruction in this country has been French in general character, the wonder is not that the specifically French influence is so strong but that it is so weak. And so far as can be judged it is on the wane rather than on the increase. Whatever may be thought of the value of the national element in American architecture there can be no doubt that it is steadily emancipating itself from specific fealties. Even in the case of an architect like Mr. Shaw with a specific tendency, his Anglicanism is so much a matter of spirit rather than form that it might easily escape detection.

The foregoing general observations may be illustrated by a detailed comment on certain particular houses. Take for instance the residence of B. E. Bensinger at Glencoe, Illinois. The parentage of this design is manifestly Italian, but the atmosphere of the house itself is just as unmistakably English. It has the quiet, unpretentious and unstudied charm of the English villa at its best. The house of Mr. R. C. Shaffner in Highland Park is another good example of Mr. Shaw's, although in this instance the purity of the design is marred by the two-storied porch at the end of the house. The way in which this porch injures the design of the house is obvious to the most unskilled eye. It is inconceivable that Mr. Shaw would have made it project in just this manner except under pressure, and all that can be said is that he yields to pressure of this kind. People must sleep out of doors now-a-days at any architectural cost. The house of Col. G.

RESIDENCE OF DONALD R. McLENNAN, ESQ., LAKE FOREST, ILL.
Howard Shaw, Architect.

RESIDENCE OF DONALD R. McLENNAN, ESQ., LAKE FOREST, ILL.
Howard Shaw, Architect.

W. French at Davenport, Iowa, exhibits another significant aspect of Mr. Shaw's work. It is a simple and robust bit of design—excellent in composition and pleasant in atmosphere. Mr. E. Norman Scott's house at Lake Forest is another case of Anglicized Italian; but the Italian is extremely superficial. It should be compared not to an Italian who was domiciled in England, but to an Englishman who had spent a few years in Italy, and had acquired a taste for the architectural equivalent of macaroni. It is characterized by a lack of integrity of conception, which is wholly un-Italian, but one likes it so much that one does not care whether it has any integrity of conception or not. The house is an instance of pleasing architectural sentimentalism which must appeal to anybody with feeling. It is interesting to note, however, that the treatment of the front of this dwelling—that part which is exposed to the public—is as severe as that of the garden side is incidental. It is, in fact, so severe that the ornamental framing of the entrance door looks as if it had been added to a dwelling built at a much earlier date and under ruder surroundings. The McBirney house at Lake Forest has some claim to be considered the best of all these houses. It can hardly be said to have any recognized parentage at all. It is conceived in accordance with perhaps the most wholesome tradition of American architectural realism, and it combines excellent composition with a picturesque effect and a complete absence of nonsense of all kinds. A more elaborately con-

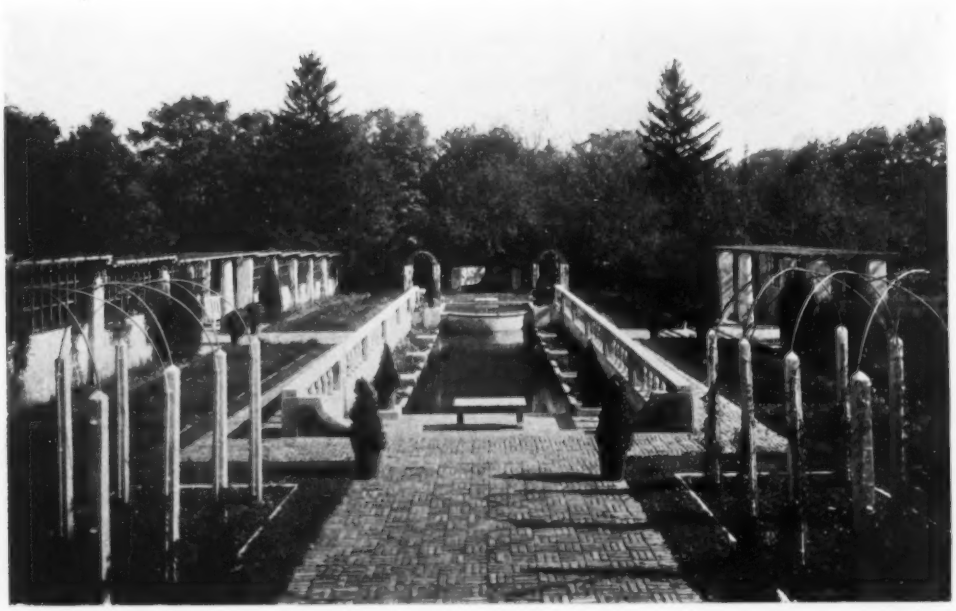



GARDEN AND HOUSE PLAN, RESIDENCE OF FINLEY BARRELL, ESQ., LAKE FOREST, ILL. HOWARD SHAW, ARCHITECT.

ceived house is that of Mr. D. R. McLennan, also at Lake Forest, but it is almost equally successful.

The brick houses, illustrated herewith are most of them much more expressive than the ordinary run of Mr. Shaw's work. Of particular interest is the residence of Mr. Finley Barrell. It is one of the comparatively rare examples in the neighborhood of Chicago of a country place which has been completely developed—that is, which has been designed just as carefully for the purpose of making the open-air surroundings of the house habitable as it has for the purpose of making its interior attractive and homelike. The result is an extremely interesting plan and an extremely interesting design. The arrangement of the ground floor is particularly worth attention. The architect has laid out three large rooms, each of which is spacious and well located, each of which is connected with out-door rooms, and each of which is conveniently connected with one another. At the same time the separation between the kitchen and servants' quarters and the rest of the dwelling is as complete as possible. The exterior of the dwelling is less interesting now; but it will become much more interesting after it has been lived in for a few years. A residence of this kind needs the confirmation which can be obtained only from the growth of the vines, trees and shrubs which have been planted in order to soften and supplement the harshness of the building. The Donnelly house at Lake Forest is a less pretentious building, but it is more interesting from the point of view of composition. It would, indeed be entirely successful were it not for the dormer windows, which hurt the balance of the design in an irritating way. Mr. C. H. Hermann's house at Glencoe is allied to that o Mr. Donnelly in conception but it is decidedly less successful. The garden façade of

RESIDENCE OF FINLEY BARRELL, ESQ., LAKE FOREST, ILL.
Howard Shaw, Architect.



GARDEN AND RESIDENCE OF FINLEY BARRELL, ESQ., LAKE FOREST, ILL.
Howard Shaw, Architect.

RESIDENCE OF FINLEY BARRELL, ESQ., LAKE FOREST, ILL.
Howard Shaw, Architect.

this residence has more character and interest than the entrance façade. A very handsome city residence is that of Edward Morris in Chicago. The architect has succeeded admirably in suggesting a certain opulence without any mere ostentation. The details of this design are particularly worth examination and study. Much of the successful effect of the façade may be traced to the way in which the ornamentation supplements the composition.

H. D. C.

II.

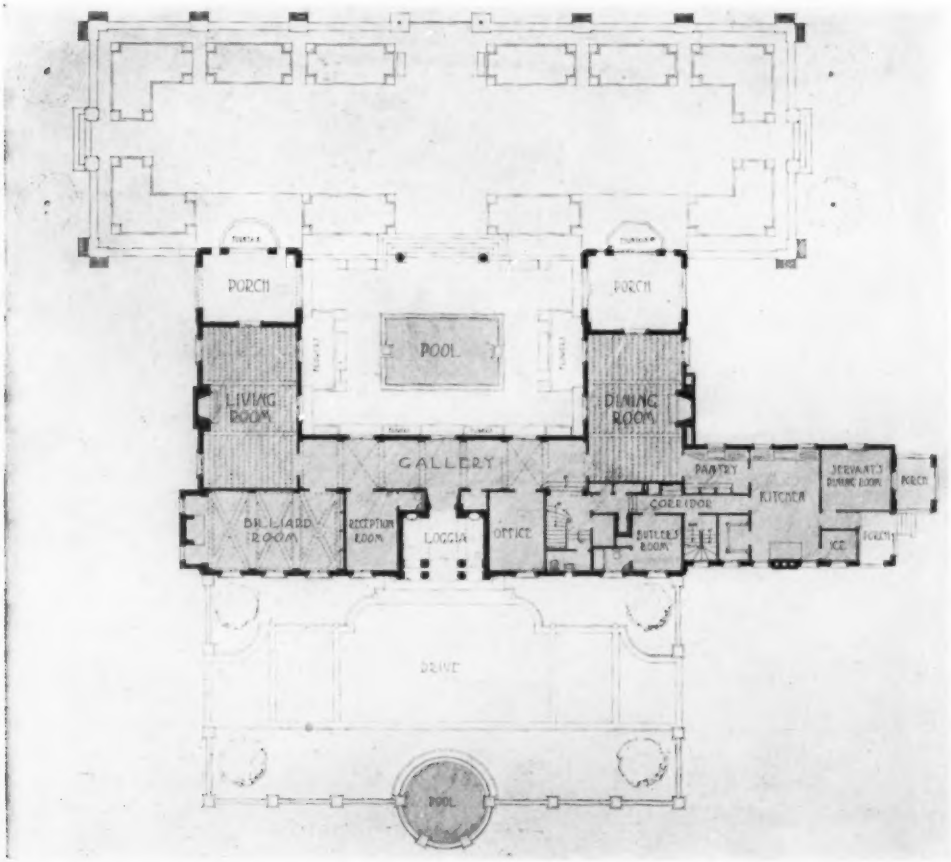
MANY PEOPLE will be inclined to rate the A. H. Marks house at Akron, Ohio, as one of Mr. Shaw's most successful and pleasing designs. Possessing as it does a certain conservatism combined with an interesting proportion of originality in its general aspect, it presents as well an excellent adaptation of the best type of English country-house plan.

Yet, as in much of Mr. Shaw's work, it is not entirely conceived in any "style," for the entrance "loggia" is, if anything, Italian. This loggia, rather dignified and even severe in its treatment, gives into a long gallery, at right angles with the axis of the loggia. This gallery, with French windows opening to the garden court and pool, leads to the left into a great living room and, correspondingly, to the right into a dining room. At this end of the house are grouped the service stairs, butler's room, servants' dining room, kitchen, pantries, and other household offices, while the central loggia is immediately flanked by a reception room and the owner's "office." The "office" is an idea taken directly from the English country house, and, in instances where the owner has occasion to interview employees or others connected with the estate or outside business, these need not be received in the house itself. The location of the bil-

liard room is well calculated to afford the club-like seclusion from the rest of the house and household which such a room should possess. There is a certain quality of symmetry about the entire plan which should commend it on sight —a symmetry in which the essentials are architecturally "on axis," but a sane arrangement in which practical convenience has not been sacrificed.

Furthermore, the garden has not been laid out (as is too often the case in the American country house) as though it had nothing to do with the house, but is brought into intimate connection with it by the raised court between the living room and dining room wings—a court warmly walled with brick, and planted all about with flowers. Two tall, detached columns on the terrace edge mark the broad stair down to the lower garden which, in turn, is terraced down to the level of the lawn. Certainly the architect is to be congratulated in that he has achieved a house which is not only a logical plan "on paper," but which sits so gracefully and effectively on its site. Despite the service wing, the impression of the garden front is of balance, while the open-air rooms on the second floor of the two main wings have been cleverly devised, by a suggestion of fenestration, to avoid the cavernous effect of the usual out-door sleeping room.

As a maker of gardens Mr. Shaw is peculiarly successful, and perhaps for




HOUSE AND GARDEN PLAN, RESIDENCE OF A. H. MARKS, ESQ., AKRON, OHIO.
Howard Shaw, Architect.

*Photograph by Steffens.*

RESIDENCE OF A. H. MARKS, ESQ., AKRON, OHIO.
HOWARD SHAW, ARCHITECT.

*Photograph by Steffins.*

POOL IN FORECOURT OF THE A. H. MARKS RESIDENCE, AKRON, OHIO.
Howard Shaw, Architect.

the reason that he imparts to his garden designs something of the old world flavor.

The forecourt of the Douglas house, for instance, albeit reminiscent of Vicobello, is happily so, and strongly illustrative of two complementary qualities which, primarily, go to the making of good architectural gardening. The background of poplars makes a splendid foil for the fountain and the terrace wall, while these in turn enhance by contrast the green behind them.

In well-studied gardens of the formal, or even the semi-formal, type there must be an abiding conjecture as to whether the effect is that of architecture embellished by planting or that of planting embellished by architecture. Since the days of the Italian gardens perhaps no architects have mastered this principle of garden design so thoroughly or so powerfully as Lutyens and Mallows in England. As a composition, as a picture in three dimensions (which is the problem of the landscape or garden designer), certainly this bit by Howard Shaw is technically and esthetically successful.

In the matter of designing interiors Mr. Shaw shows not only greater architectural individuality, but also a quality more nearly approaching consistency and personal style than he displays in the external aspect of his country houses.

One feature stands out saliently, and though it may seem an inconsequential detail, yet it is so characteristic of the architect that any observant critic, noticing it, would instantly guess that he was in a "Howard Shaw" house. Mr. Shaw seems to occupy a unique position in American architecture in his appreciation of the decorative value of ornamental plaster. Many American architects have availed themselves of the conventional "figured plaster" ceiling in geometrical arabesques, but it is hard to call to mind any (with the exception of Cram, Goodhue and Ferguson) who have utilized the more informal type of figured plaster work.

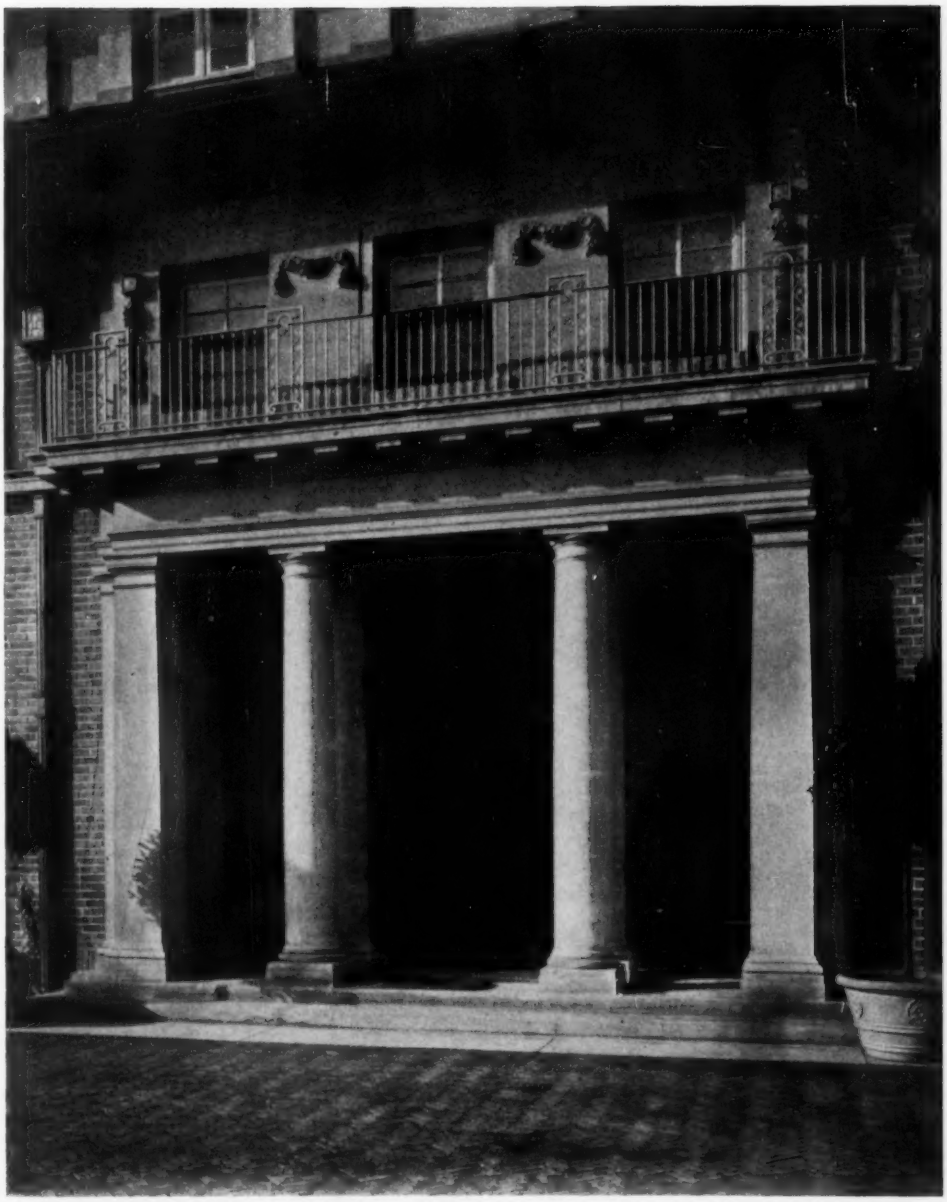
Among the illustrations here, note

*Photograph by Steffins.*

THE GARDEN FRONT, RESIDENCE OF A. H. MARKS, ESQ., AKRON, OHIO. HOWARD SHAW, ARCHITECT.

*Photograph by Steffens.*

RESIDENCE OF A. H. MARKS, ESQ., AKRON, OHIO.
HOWARD SHAW, ARCHITECT.



*Photograph by Steffens.*

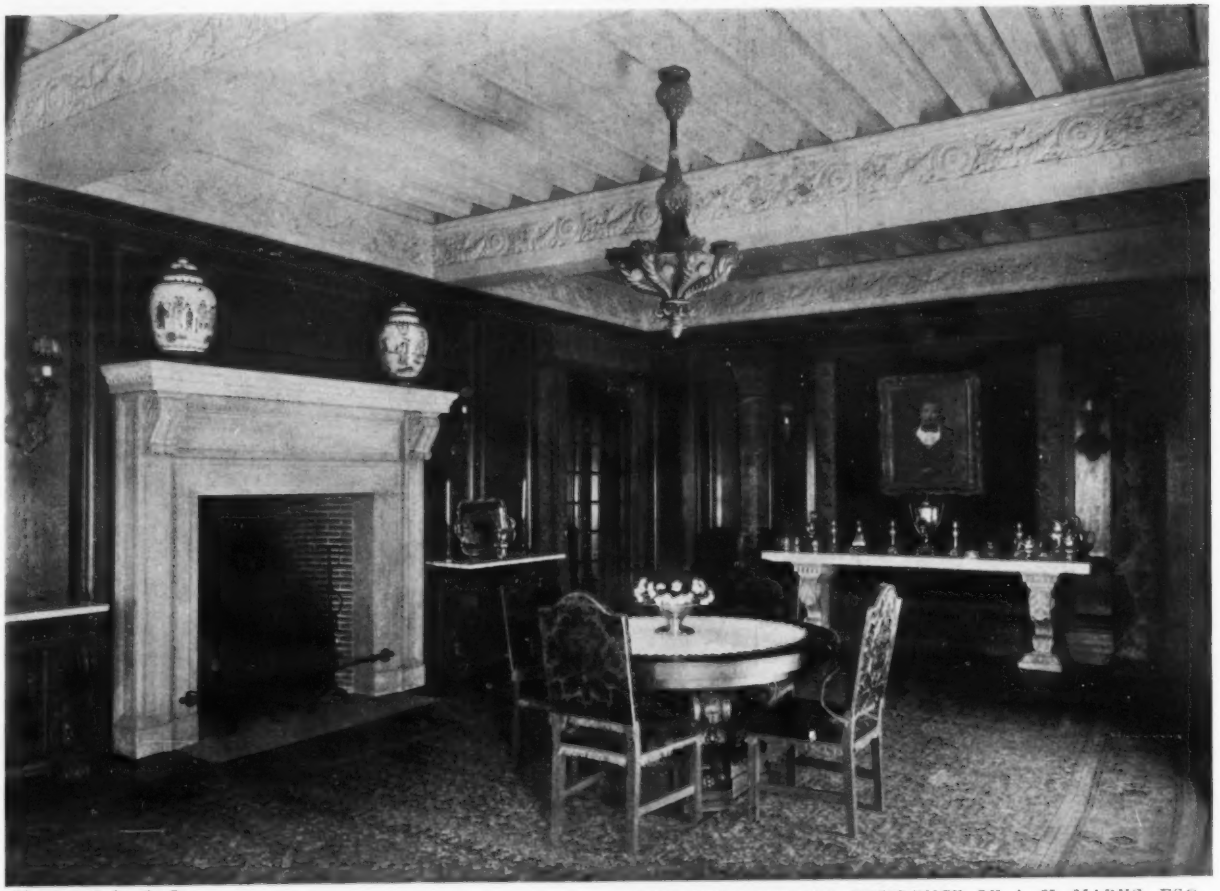
DETAIL OF ENTRANCE LOGGIA, RESIDENCE OF A. H. MARKS, ESQ., AKRON, OHIO.
HOWARD SHAW, ARCHITECT.

*Photograph by Steffins.*

DETAIL OF TERRACE COURTYARD, RESIDENCE OF A. H. MARKS, ESQ., AKRON, OHIO. HOWARD SHAW, ARCHITECT.

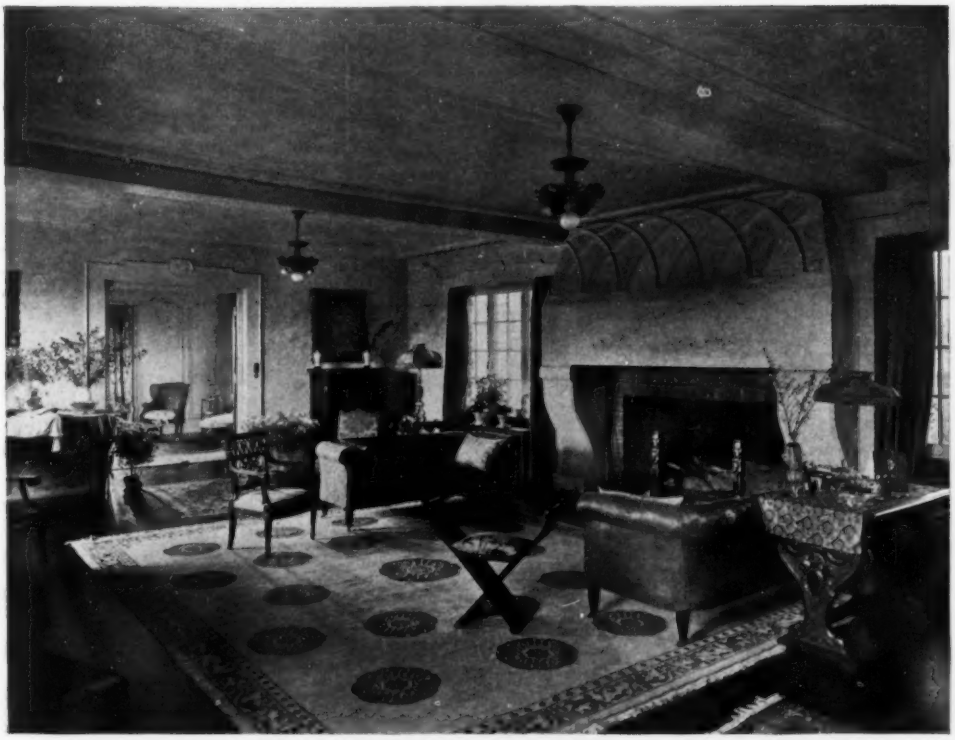
*Photograph by Steffins.*

THE LIVING ROOM, RESIDENCE OF A. H. MARKS, ESQ.,
AKRON, OHIO. HOWARD SHAW, ARCHITECT.



*Photograph by Steffens.*

THE DINING ROOM, RESIDENCE OF A. H. MARKS, ESQ., AKRON, OHIO. HOWARD SHAW, ARCHITECT.



LIVING ROOM, RESIDENCE OF HUGH J. McBIRNEY, ESQ., LAKE FOREST, ILL.
Howard Shaw, Architect.

should be made of the interiors shown of the Douglas, Marks, Barrell, Hermann and Morris houses, where either frieze or ceiling beam has been made interestingly attractive with bands of cursive, free and informally conventionalized ornament.

The dining room of the Douglas house is very interesting, and shows not only Mr. Shaw's characteristic decorative plaster work, but also a quaint and remarkably effective painted frieze above richly figured paneling. The excellent choice shown in the selection of lighting fixtures is apparent in this, as in nearly all of Mr. Shaw's work, and though this may seem outside the province of architecture proper, it is, none the less a particular in which many otherwise excellent interior schemes fail miserably.

An interesting impression can be recorded as obtaining in Mr. Shaw's conception of an interior, be it rich or severe —an impression that it represents neither the style of any specific "period" of decoration, nor yet any entirely original style of the architect. These interiors suggest without representing—they have an atmosphere of traditional conservatism plus the "personal equation" of the architect.

There is the same impression in the interiors of the Marks house—in the living room, perhaps, a more distinctly Italian feeling, especially in the painted ceiling. By chance of the owner's possession, or by the perception of the architect, the effect and character of many of Mr. Shaw's interiors are vastly enhanced by the introduction of tapestries.

The living room of the McBirney house is more like Mr. Shaw's earlier work than most of the other interiors shown. There is a delicate application of figured plaster on the ceiling, which

tends to throw the heavy mantel-piece entirely out of scale, although its broad expanses contribute toward the impression of simplicity which was evidently desired throughout the house, as evidenced by the treatment of the hall.

Mr. Shaw, departing from his characteristic interior treatment, almost effected a Georgian rendering in the dining room of the Hermann house, but asserted himself in the figured plaster frieze, informal and pleasantly decorative. Again, worthy of note is the nicety of scale in the lighting fixtures.

It is unfortunate that the architectural excellence of the library in the Morris house has been spoiled by the comparative triviality in scale of the pictures; as well as the restless diversity in their sizes and their frames. Here is an instance in which the architect might excusably have wished to carry out the entire room, for none but a certain kind of picture in a certain kind of frame can dwell in harmony and accord with an all-paneled wall.

Returning again to ideas of simplicity, there is the entrance hall of the Coonley house—an interior in which an interesting beam and plank ceiling seems to suggest more of Wilson Eyre's mediaevalism than we generally associate with Howard Shaw. Also there is a flavor of modern English domestic architecture, a reminder of Voysey or Baillie Scott, yet withal a rendering by no means out of place on American soil, and one which is readily and wholly acceptable on sight, regardless of suggestion or precedent.

Broadly speaking, Mr. Shaw's ideas in the design of interiors seem to show a tendency in the direction of the English domestic type, though there is too much originality in them to give aptness to any strict comparison. We have grown

DINING ROOM, RESIDENCE OF C. H. HERMANN, ESQ., GLENCOE, ILL.
Howard Shaw, Architect.

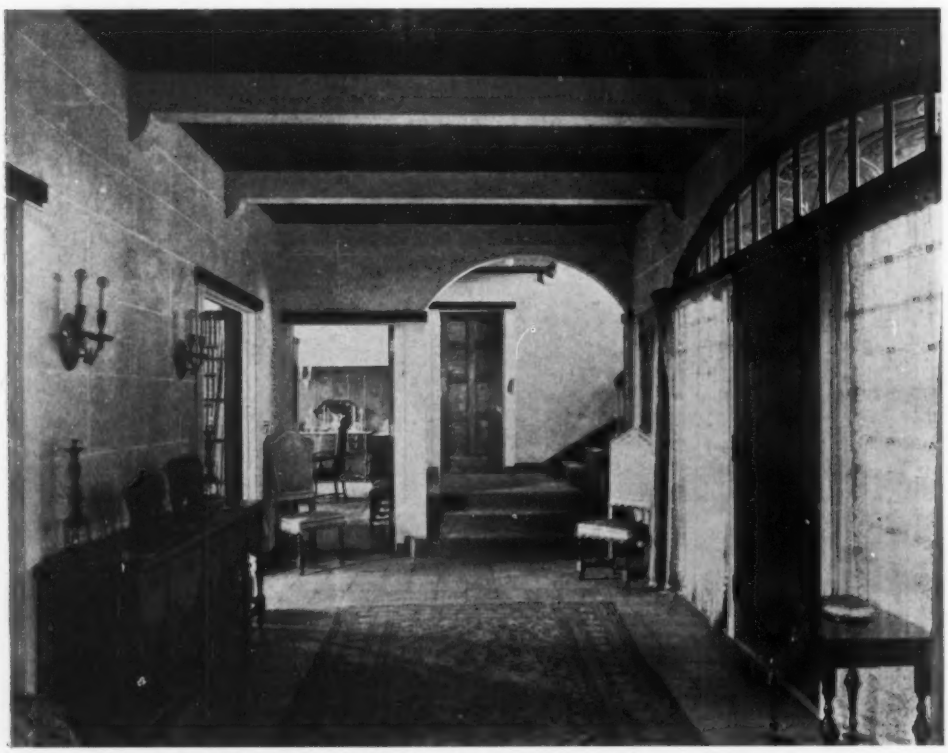
LIBRARY, RESIDENCE OF EDWARD MORRIS, ESQ., CHICAGO, ILL.
HOWARD SHAW, ARCHITECT.

so habitually used to tracing architectural derivations that it is doubtful if we are in a sufficiently independent receptive mental attitude to recognize original architecture in this country if we were confronted with it.

Upon analysis it will be found that Mr. Shaw's sense of scale and appropriateness in interior details finds more evident expression than in exterior details. A general appropriateness makes itself felt—a sense which is derived no less from pleasing detail than from pleasing proportions. No superficially architectural embellishments can save a room which, in itself, is "the wrong shape."

Speaking without regard to "style," as such, in Mr. Shaw's work, but of his mannerism in detailing, an interesting observation as to *scale* might be made. Too often his execution does not keep pace with his idea, or stated in different terms, it is not that he places a final urn where it does not belong, but rather that he does not always select the right kind of urn. The detail is skilfully appropriate in its relation to the design as a whole, but lacks the proper sort of finesse in itself, which is illustrated in the garden front of the C. H. Hermann house. The garlands in the lunettes of the arches are, theoretically, logical decorations, but give the impression of being out of scale.

There is this to be said, however, of Mr. Shaw's detail, even when it seems most unacademic — that there is a "quaintness" almost approaching, at times, the primitive or archaic. This quality is very noticeable again in the garlands which are introduced above the entrance of the A. H. Marks house—a building which shows, in other respects, far more "manner" than most of the other houses illustrated. How pleasant,

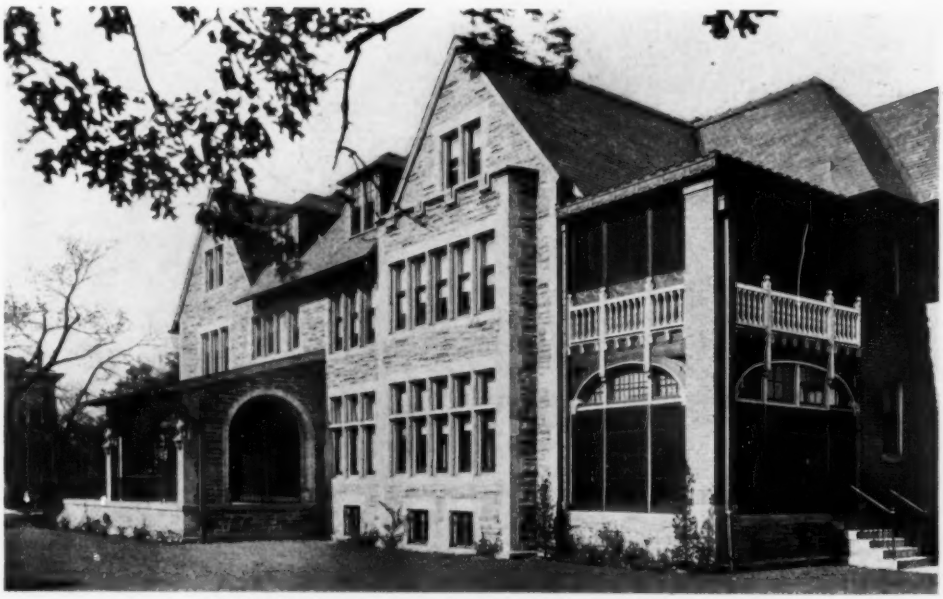


THE HALL, RESIDENCE OF PRENTISS COONLEY, ESQ., LAKE FOREST, ILL.
Howard Shaw, Architect.

DETAIL, RESIDENCE OF HUGH J. McBIRNEY, ESQ., LAKE FOREST, ILL. HOWARD SHAW, ARCHITECT.

AN ENTRANCE DETAIL.
HOWARD SHAW, ARCHITECT.

RESIDENCE OF EDWARD MORRIS, ESQ., CHICAGO, ILL.
Howard Shaw, Architect.



RESIDENCE OF T. E. WILSON, ESQ., CHICAGO, ILL.
Howard Shaw, Architect.

RESIDENCE OF COL. G. W. FRENCH, DAVENPORT, IA.
Howard Shaw, Architect.

for instance, is the rendering of the court-yard, and how well disposed the larger masses of the house.

When Mr. Shaw is engaged in a rendering of an English style, as in the Edward Morris house, there is apparent a more conservative feeling, a regard not only for whatever tradition might be involved in the work in hand, but a greater evidence of a sense of scale. That this English work is sincere there is no doubt, for it often plays an unexpected part in some building otherwise designed in different vein. That Mr. Shaw's renderings of it, however, are always what might be strictly accepted as scholarly, does not follow. It seems unduly obvious to say that a stone porte-cochere would have been more appropriate for the entrance of the Edward Morris house than the glass and iron marquise, and yet the marquise could probably be explained as a concession to some fancy of the owner, for the architect must always occupy a position in which he is at once blamed for vagaries and credited with merits not his own.

If criticism is made of Mr. Shaw's mannerism of detail, however, this cannot, if intelligent, be made unreservedly. Even if much of the detail of those houses illustrated here can be called unstudied, there is much in its freedom and its expression of individuality to commend it, for there is usually more value in originality than in absolute dependence on precedent. Mr. Shaw's detail is admirably just in as far as it is a sincere expression of a sincere belief on his part. There is something in it which seems to vaguely suggest the modern German—a certain fulness of form and certain assurance (sometimes overdone) which characterizes some of the most recent developments of German architecture.

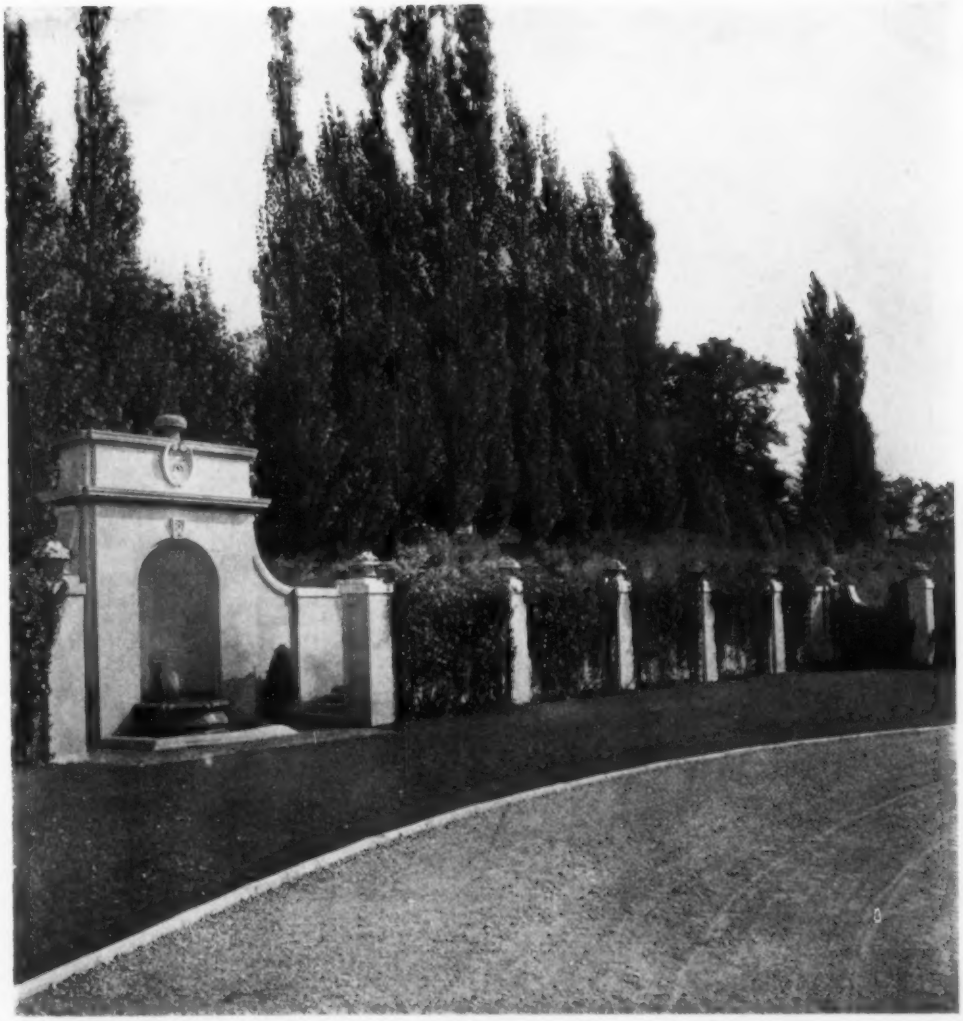
Despite a rather confusing impression, resulting from the apparent diversity of Mr. Shaw's work, as shown here, it will be found upon careful study that, in the main, the architect has adhered with general consistency to certain broad architectural ideas.

His conception of the country house is neither that of an secessionistic eccentric

or of a conservative copyist. Evidently he is primarily concerned in building a dwelling, and he usually succeeds in making it at once livable, dignified and picturesque. Perhaps the basic incompatability of the dignified and picturesque is reconciled nowhere more successfully than in Mr. Shaw's treatment of the country house. He has frankly recognized it as a problem, accepted it as such, and abided by its limitations no less than he has improved upon his possibilities. If his conception of dignity does not approach that of Charles A. Platt, it is equally true that his conception of purely picturesque values does not approach that of Wilson Eyre. He treads the middle ground, and, being neither an extremist nor a conservative, succeeds in being individual and fresh in his architectural outlook without being eccentric, and in being something of a student of precedent without being stupid.

RESIDENCE OF R. C. SCHAFFNER, ESQ., HIGHLAND PARK, ILL.
Howard Shaw, Architect.

HOUSE AND GARDEN OF THE LATE W. D. DOUGLAS, ESQ.,
LAKE MINNETONKA, MINN. HOWARD SHAW, ARCHITECT.



THE FORECOURT, RESIDENCE OF THE LATE W. D. DOUGLAS, ESQ., LAKE MINNETONKA, MINN.
HOWARD SHAW, ARCHITECT.

GARDEN FRONT, RESIDENCE OF THE LATE W. D. DOUGLAS, ESQ., LAKE MINNETONKA, MINN. HOWARD SHAW, ARCHITECT.

DINING ROOM, RESIDENCE OF THE LATE W. D. DOUGLAS, ESQ., LAKE MINNETONKA, MINN. HOWARD SHAW, ARCHITECT.

RESIDENCE OF C. H. HERMANN, ESQ., GLENCOE, ILL.
HOWARD SHAW, ARCHITECT.

DETAIL OF GARDEN FRONT, RESIDENCE OF
C. H. HERMANN, ESQ., GLENCOE, ILL.
HOWARD SHAW, ARCHITECT.

EMBLEMATIC NORSE FIGURE FOR THE NEW YORK CUSTOMS HOUSE. JOHANNES S. GELERT, SCULPTOR. CASS GILBERT, ARCHITECT.

# A DANISH-AMERICAN SCULPTOR

## THE WORK OF JOHANNES S. GELERT

CHARLES HENRY DORR

ONE FEELS the spirit of the Norseland, the courage and resolute will of the north, the songs of the sagas of legendary lore in the majestic figure of the daughter of the Vikings typifying Denmark, which ornaments the United States Custom House, New York, a figure of heroic stature, carved in Tennessee marble by Johannes S. Gelert, and an imposing example of this Danish-American sculptor's art.

There is something more than marble in this robust figure of the Norseland, clad in the mediæval costume of the period, about the year 1000 and clasping a boat hook of the Vikings in her hand. It reflects the indomitable heroism and virile character of the hardy northlanders, this Viking's daughter. It also reveals the sculptor's inclination toward interpreting the Norse mythology, while the lines of beauty suggest the student of Thorwaldsen.

In his boyhood days, Johannes Gelert, the son of Ludwig Christian Frederick Gelert, Court Jeweler to Emperor Dom Pedro, of Brazil, thought he heard the call of the sea, and went to Copenhagen from his native town of Nybel in Denmark, which is now a province of Prussia. Wandering about the docks of Copenhagen he endeavored to find a berth on board ship, but he did not encounter any captain who encouraged his ambitions to become a sailor.

So he happened to meet a wood carver in the Danish city, who gave him employment, and the young Dane, who wanted to be a sailor became so interested in wood carving and modeling in clay that he forgot the call of the sea and continued the craft of wood-carving for some four years and in his spare time studied art in the Royal Academy at Copenhagen. Thus he began his career in the pursuit of art and while a

CARYATID FIGURE.
Johannes S. Gelert, Sculptor.

student in Copenhagen he was commissioned to decorate one of the theatres in that city, and executed a series of decorative figures representing the history of music. His first important commission soon followed after receiving medals at the Danish Academy, and he went to Paris, where he exhibited in the Salon a colossal group in sculpture representing the god Thor of Norse mythology, which attracted much favorable attention.

He was then chosen to execute a series of decorations for the Palace Trocadero in Paris, and afterwards returned to his home city of Copenhagen.

In 1882 he received a scholarship from the Danish Government, and visited Rome, where he continued his study of art and occasionally completed an example of sculpture.

While in Rome he modelled a group of sculpture, which he called "The Little Architect," a work not unlike a tale of Hans Christian Andersen. Here, carved in marble, are two little children at play, and "The Little Architect" is about to transform a mound of sand with his wand into a castle, a fanciful theme, and invested with the spirit of childhood by the sculptor. Later the group was exhibited at the Philadelphia Art Club, where "The Little Architect" received a gold medal, and the Committee on Selection chose the piece of sculpture for representation at the Paris Exposition.

In 1887 Gelert sailed for America and upon his arrival in this country called at the studios of Augustus St. Gaudens and J. Q. A. Ward, but much to his surprise both of these distinguished sculptors were away from town for the summer, something unheard of in Denmark.

Then the Danish artist proceeded to Philadelphia and Boston and finally arrived in Chicago, where, by chance, he met a fellow countryman, who informed him of the proposed Haymarket monument, planned for that city.

Gelert was finally awarded the commission and at the World's Columbian Exposition was not only represented by important examples of his sculpture, but was also appointed a member of the International Jury of Award.

His statue of "Neptune" was exhibited in the Court of Honor, and his dramatic group, "The Struggle for Work," an emotional portrayal of the strife in the field of labor—also met with wide popular approval.

In the semi-classical figure of "Gothic Art," which was carved in Indiana lime-

stone for the Museum of Fine Arts, St. Louis (the building by Cass Gilbert) is an example of beauty and rhythm of line and subtle modelling.

It is a graceful figure, this maiden of Gothic Art, who is clasping in one arm the model of an ancient shrine, presumably enclosing a relic from some far-away clime, and withal revealing a classic note in the art of the sculptor.

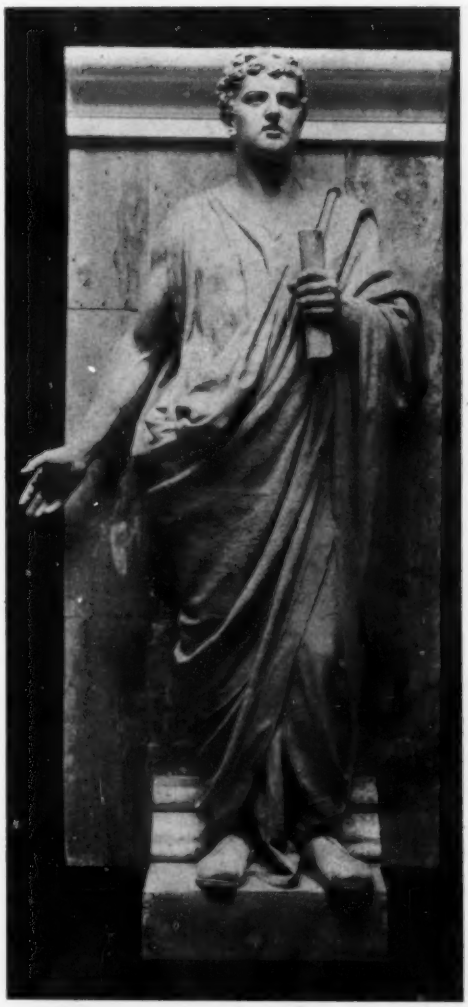
This figure ornaments the portals of the Fine Arts Musuem in the Missouri metropolis, where it stands symbolical of the art of bygone ages.

Often the arrangement of the drapery enveloping a figure enchances the expression, and, for instance, this effect is revealed in the life-size figure of "Intercession," which was designed for a tomb in Perth Amboy, New Jersey. Although an early commission, it illustrates the sculptor's skill in the modelling of the figure, the expression of appeal, which is accentuated by the folds of the drapery. The figure was designed for Mr. E. V. Ekesen, a fellow countryman of the artist, and is in terra cotta.

Another figure designed for a tomb is the Caryatid, which is executed in light gray granite and mounted on a pedestal, with the inscription "Hope." The figure, which is one of a series of four made for the Furman family, of Nashville, Tennessee, is holding a flower bud in the left hand, symbolical of hope. These Caryatids are supporting a canopy over the sarcophagus.

At the Nashville Centennial Exposition, the South honored the Danish sculptor by awarding him a gold medal for his figure of "A Wounded American Soldier." The model for this soldierly figure was the son of a well-known American General, who participated in the Civil War. It is an extremely effective composition, natural in pose and withal suggests a modern antique.

On the western façade of the Brooklyn Institute of Arts and Sciences, designed by McKim, Mead and White, are four colossal figures typifying Roman civilization, by Johannes Gelert, and comparatively recent examples of his art.



ROMAN ORATOR, FOR THE BROOKLYN INSTITUTE OF ARTS AND SCIENCES.
Johannes S. Gelert, Sculptor.
McKim, Mead and White, Architects.

Here stand the figures of Augustus, a classic type of the Roman period; Justinian in Byzantine costume, and carrying a book of historic days; Julius Caesar, the Roman Statesman, and Cicero, the Roman orator, who stands with scroll in one hand, perchance the manuscript of some famous oration, a souvenir of the intellectual prowess of Roman civilization.

All of these figures were designed by

THE EMPEROR AUGUSTUS AND THE ORATOR CICERO, FOR THE BROOKLYN INSTITUTE OF ARTS AND SCIENCES. JOHANNES S. GELERT, SCULPTOR. McKIM, MEAD AND WHITE, ARCHITECTS.

the sculptor to conform to the architecture of the Brooklyn Institute of Arts and Sciences and to harmonize with the architectural lines of the edifice. The modelling of the figure of Augustus is skillful, and the ornamentation of the cuirass worn by the Roman reveals an original design by the sculptor.

It may be interesting to note here that the late Francis D. Millet, the American artist, loaned several togas from his collection to the sculptor while he was engaged in modelling the figures of Julius Caesar and Cicero.

"INTERCESSION," FIGURE FOR A MAUSOLEUM.
Johannes S. Gelert, Sculptor.

"GOTHIC ART," AN ALLEGORICAL FIGURE.
Johannes S. Gelert, Sculptor.

"To model in clay is only child's play, but to get a commission is a hard proposition" is the title of a fanciful vignette in the sculptor's studio. It portrays two children who are engaged in modelling the classic head of a goddess of tradition. Alluring is this conceit of the sculptor, which again reveals the versatility of his art, and also illustrates, in a serio-humorous vein, a truth known to almost every artist.

Another series of sketches expressing the joyousness of childhood include several figures of the sculptor's children.

These original studies show a group of children at play in a variety of interesting poses. One of the little figurines in the series was appreciated abroad, for it was secured by the Art Society of Copenhagen.

Among the numerous designs of interest in the sculptor's studio are sketches and studies in preliminary stage appropriate for city parks or municipal buildings. One of these is a model for a colossal dual fountain, symbolical in theme and set in a Roman pergola.

Mounted on his fleet-winged Pegasus, Apollo stands with lute in hand, riding over a huge boulder, and grouped around the rock of Helicon are the figures of the nine muses and the graces. Here may be noted Terpsichore, Melpomene, Cleo and Euterpe attired in flowing Grecian costumes, picturesque figures in this ornamental design for a classic fountain.

A battle between the gods of the Norseland and the monsters of antiquity forms a mythological theme portrayed in a bas-relief, another study noted in the atelier of the sculptor.

"Westward the star of empire takes its way," and in the west the art of Gelert is represented by several notable examples of this Danish sculptor.

In Lincoln Park, Chicago, is Gelert's seated figure of Hans Christian Andersen, a countryman of the artist. The celebrated author of fairy romances being depicted with a tablet and pencil, and near by is the "Ugly Duckling," suggested by one of the Danish writer's creations.

There is a similarity in a way between these two Danes, the author and the sculptor. Judged by a number of his juvenile subjects, his statuettes of children for which he has a penchant. Gelert might be called the Andersen in the realm of sculpture.

Aside from the Andersen statue, Gelert is also represented in Lincoln Park by a large bust of Beethoven.

Among other examples of the sculptor's work in portraiture is a bust in marble of the distinguished journalist, Joseph Medill, the late editor and publisher of the Chicago Tribune.

Another interesting example of portrait statuary is the heroic figure of General U. S. Grant, which stands in Galena, Illinois, the home of the national hero before and after the Civil War. Veterans of the great conflict between the North and South declare this statue to be a most intimate likeness of the illustrious soldier.

A statuette of a hero of another nationality is of the Greek Theseus, which was awarded a gold medal in Philadelphia. It portrays the Greek hero asking for the hand of Ariadne, and was included in the sculpture exhibit at the recent Winter Academy.

THE SOUTH PARLOR, MEDINAH TEMPLE, CHICAGO, ILL.
Huehl and Schmid, Architects.

# EASTERN ARCHITECTURE IN THE WEST

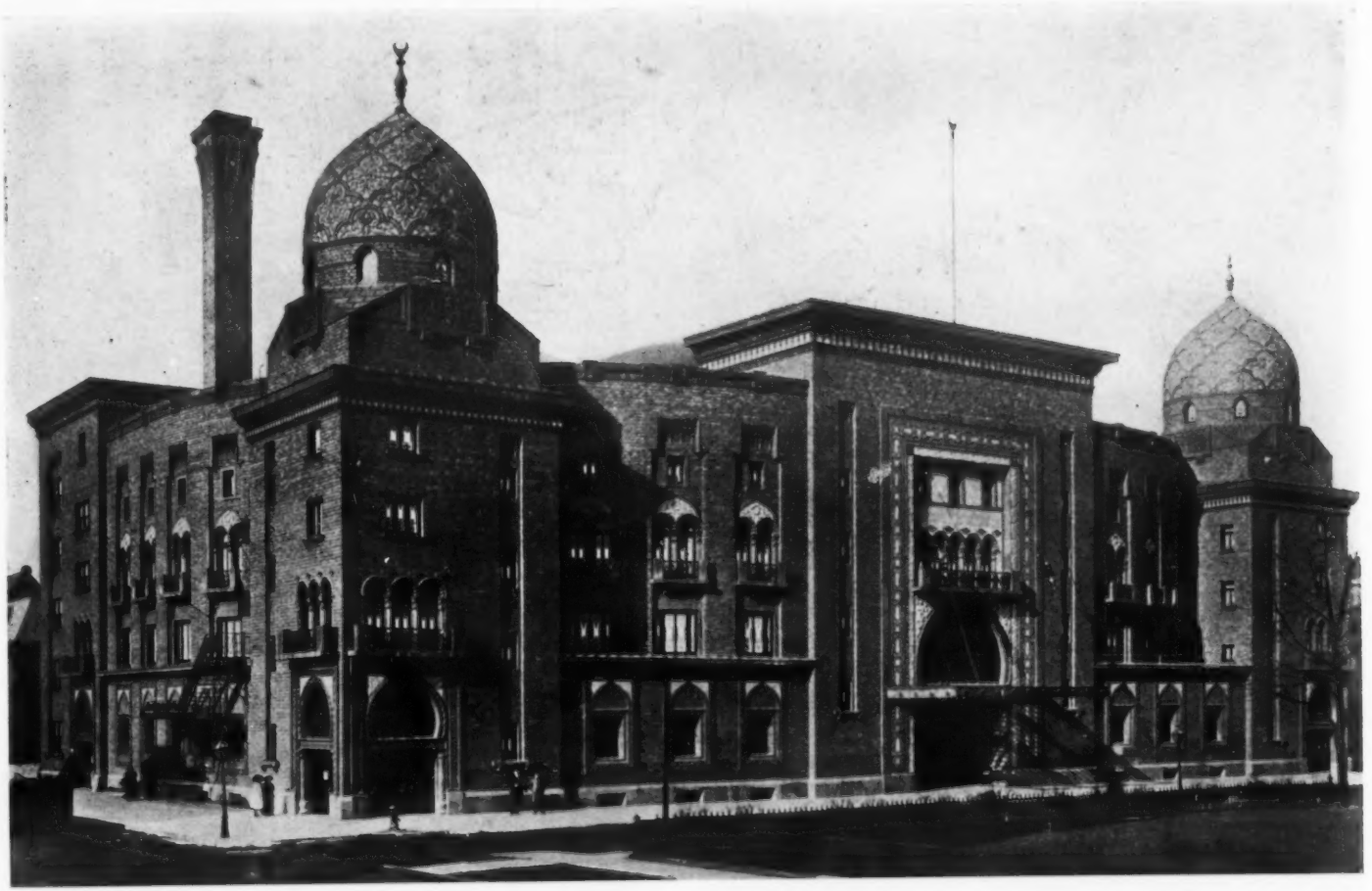
## MEDINAH TEMPLE IN CHICAGO. HUEHL & SCHMID ARCHITECTS

BY J. E. MURPHY

[After January 1st, 1913, Huehl, Schmid and Holmes.]

IN THE NEW Medinah Temple recently, erected for the Masonic order of the Mystic Shrine in Chicago, is found one of those rare instances in which a building designed in a historical style remote from our twentieth-century civilization and ideals seems logical and in harmony with its surroundings. This result, no doubt, is due in part to the restraint and artistic balance manifested in the use of architectural and decorative detail, and in part to the peculiar requirements of the Shrine order, requirements that it was necessary to observe in any event.

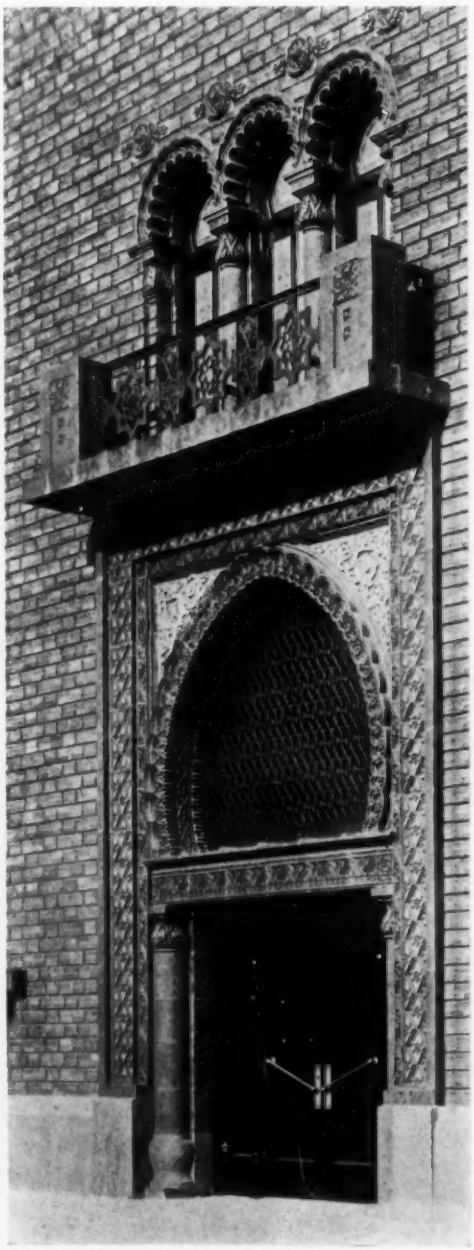
Arabic design runs easily into exuberance while buildings of the Arabic period are, more often than not, characterized by a lack of organic perfection, and are illogical structurally. In the excellence of its plan and construction the Medinah Temple is thoroughly modern, while the Arabic elements are so woven into the design as to become an integral part of it. This building is, in fact, a modern structure, with Arabic decorative expression, just as the Shrine itself is an organization modern in its ideals, but possessing an Arabic ritual.



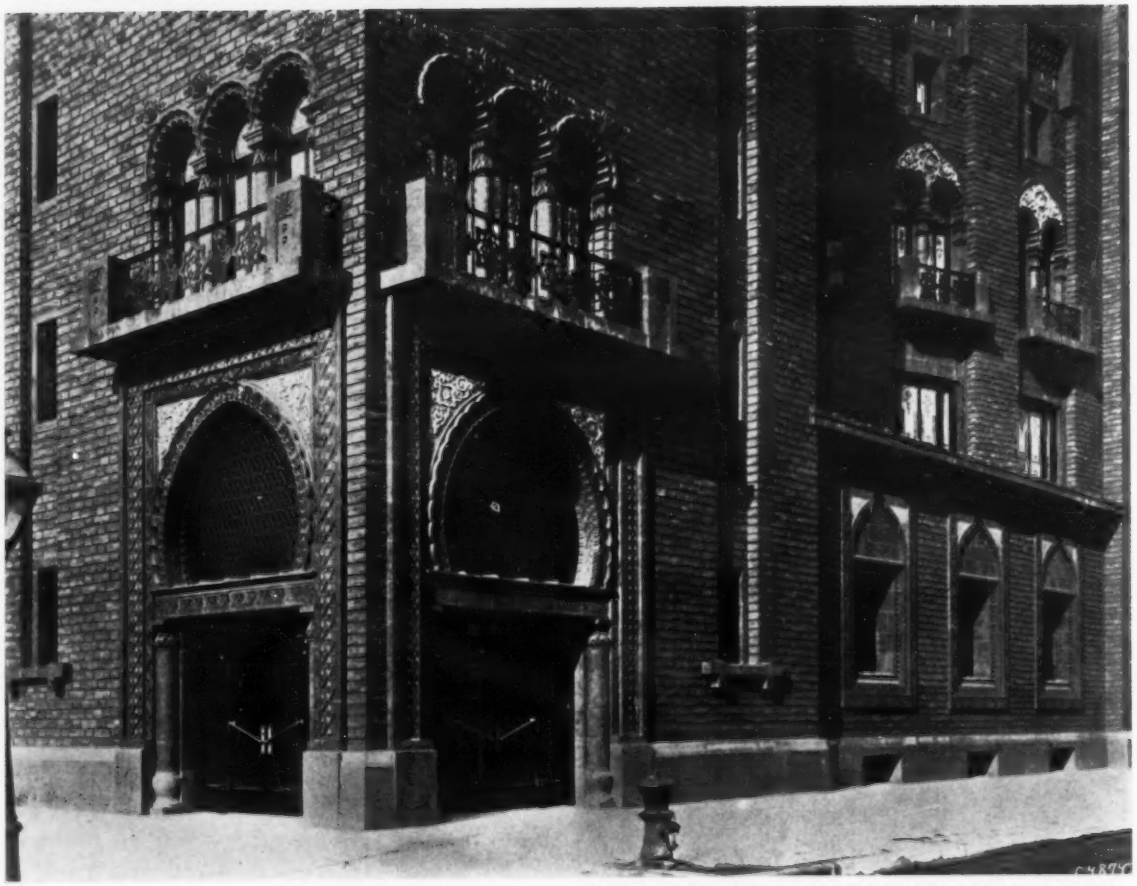
MEDINAH TEMPLE, CHICAGO, ILL.
HUEHL AND SCHMID, ARCHITECTS.

The ground area covered by the building is an even half block, or, to be exact, 218 feet north and south by 150 feet east and west. The main entrance is on Cass street. With the exception of the basement, the greater part of the space, probably 90 per cent, is utilized for the auditorium, the largest and most impressive in the West. The seating capacity of this auditorium, forty-two hundred, is misleading as to the true dimensions, since a large amount of seating capacity is lost through the extension of the stage beyond the proscenium for a distance of about fifty feet, and from the fact that the seating system of the main floor does not extend under the balcony. This form of stage is required for the classes and entertainments of the Shrine, while the space under the balcony is reserved for checking rooms and parlors. With the stage and the main floor seating arranged as in an ordinary theatre, this auditorium would have a seating capacity of over seven thousand. The various rooms required for the business of the Shrine are ingeniously grouped along the borders and in the corners of the building. The basement is utilized as a banquet hall, with a seating capacity of twenty-three hundred.

In considering the architectural and decorative treatment of this building, it is well to bear in mind that some features necessarily occur that are important to members of this secret order, but are not of special significance to others. It is believed that no member of the Shrine, or that no layman, for that matter, who knows something of the ideals of this order, would ever mistake the building for other than what it is. At the same time the building is in harmony with its surroundings. The noting of two such facts as these is, in a way, commendation as great as can be given any architectural design. In general effect, the exterior is brown, the color of the brick and most of the terra cotta. But monotony of color is effectively avoided by the use of red, yellow, blue, white and gold, applied with the boldness characteristic of Arabic design. All forms of arch common to Mahometan architecture—the semicircular, horseshoe, pointed and keel—are employed in the exterior. At all the entrances the horseshoe arch,



DETAIL OF CORNER ENTRANCE AND BALCONY, MEDINAH TEMPLE, CHICAGO, ILL.
Huehl and Schmid, Architects.



DETAIL OF CORNER ENTRANCES AND BALCONIES, MEDINAH TEMPLE, CHICAGO, ILL.
HUEHL AND SCHMID, ARCHITECTS.

MAIN ENTRANCE AND TOWER, MEDINAH TEMPLE, CHICAGO, ILL.
Huehl and Schmid, Architects.

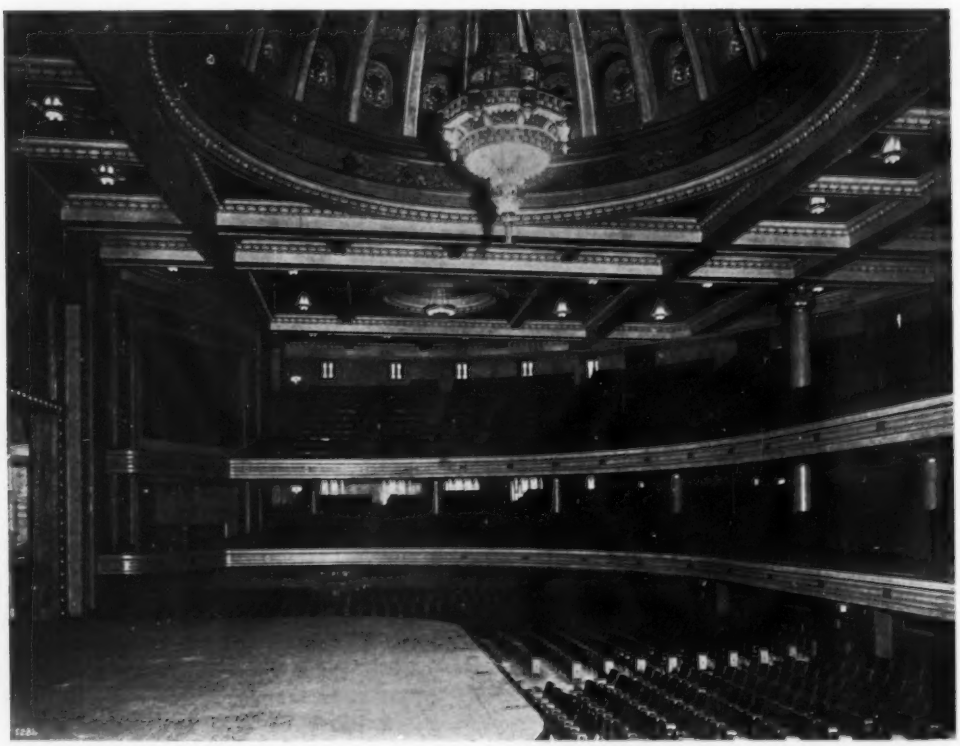
slightly pointed, is used. The historic Arabic inscription, "There is no God but Allah," repeated as an ornament, forms a border around the rectangle of the main entrance. This inscription is in the Italic Arabic characters, and is copied from the Alhambra. Aside from this inscription there is no actual copying in the entire building, the decoration and ornament being worked out in the spirit of Arabic design, rather than in direct imitation of it. The decorative details of the exterior are of terra cotta, in standard finish, with the exception of the inscription, which is white enameled terra cotta.

The general form of the building is rectangular to the second-floor level. Above this level the outline, exclusive of the towers, follows the curved form of the auditorium, eliminating floor space, for which there is no specific need, and adding to the picturesque effect of the exterior. It will be noted that, contrary to the most common Arabic precedents, there is no wall decoration, the decorative treatment being confined to entrances, windows, cornices and domes.

At the same time, the exterior, as a whole, is rich in decorative effect, while there is a decided decorative value even in the blank wall spaces. The latter feature is evidently due to the modified form of Flemish bond used in the brick work. In this form of bond the brick are laid in "four-to-one" units, each stretcher consisting of four ordinary brick, and each header of two brick of the ordinary cross-section but sixteen inches in length. The units are formed with close joints, and are separated by joints three-quarters of an inch in thickness. The corner domes have pointed-arch sections. They are formed of terra-cotta panels, wrought in elaborate Arabesques, and supported on curved steel ribs.

The principal feature of the building is the auditorium, all other parts being subordinate to this. It is, therefore, in the auditorium that the most important features in plan and decorative effect are to be found. In an interior of this size—a block long and nearly half a block in width from the proscenium to the east wall—with a ceiling fifty feet above floor level, and supported by only two visible columns—with a bare stage projecting far into the seating area—a barnlike effect might easily result. This interior, on the contrary, produces an effect both of compactness and spaciousness. Aside from three dominant features—the heavily beamed ceiling, the domes and the mural painting over the proscenium—the decoration is simple, consisting mainly of slender borders, cornerpieces in the wall and ceiling panels, and a somewhat elaborate border in bas relief around the rectangles of the proscenium.

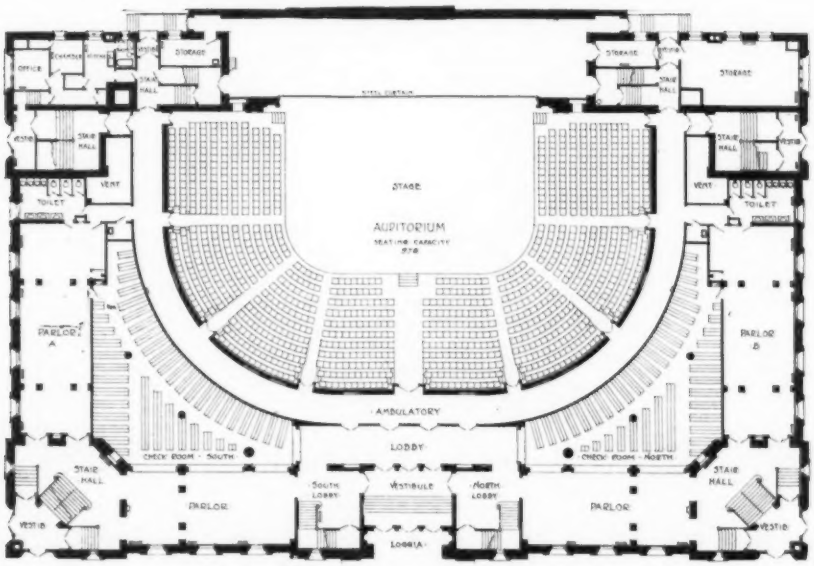
The beaming of the ceiling gives a wealth of detail to what would otherwise be a dead expanse of surface, and, what is of equal importance, it expresses



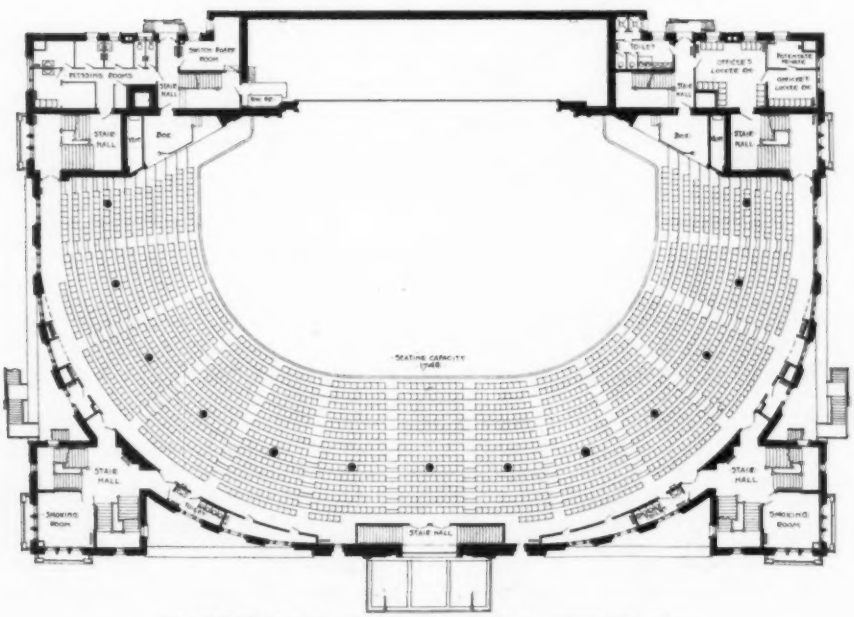
INTERIOR OF THE AUDITORIUM, MEDINAH TEMPLE, CHICAGO, ILL.
Huehl and Schmid, Architects.

CORNER TOWER, MEDINAH TEMPLE, CHICAGO, ILL.
Huehl and Schmid, Architects.

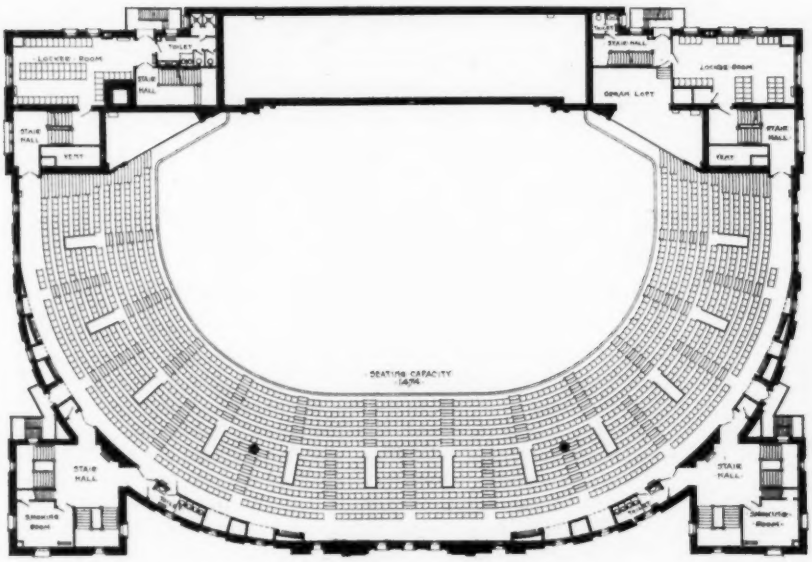
structure in such a way that no one who gives thought to such matters could be mistaken as to the form of construction of this ceiling. This construction consists of a system of steel trusses, between which are framed secondary trusses and girders. The exact location of each truss and its function in the structure is easily followed in the beaming. A truss having a span of 92½ feet extends from each column to a support in the proscenium wall, while a similar truss connect the two columns. These trusses furnish primary support for the central portion of



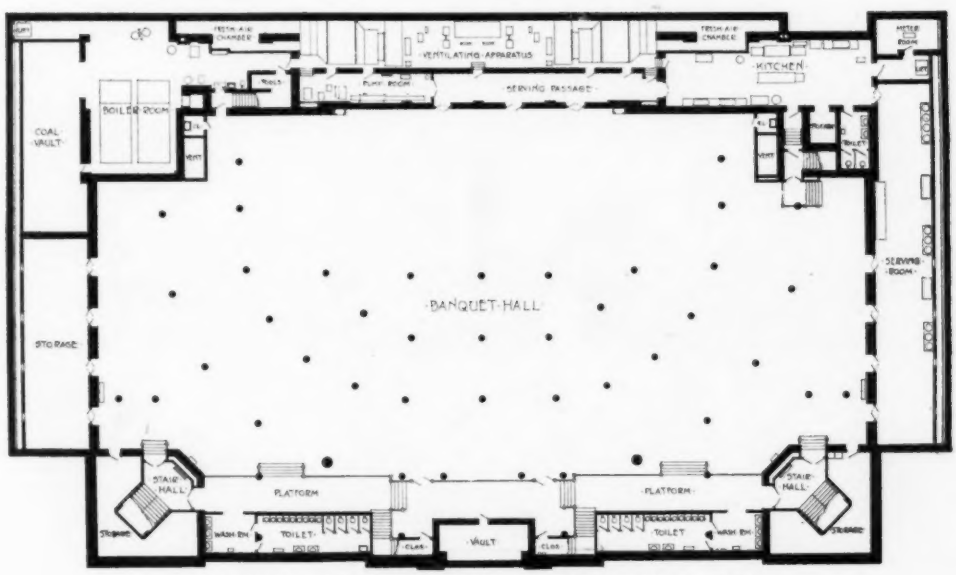

MAIN FLOOR PLAN, MEDINAH TEMPLE, CHICAGO, ILL.
Huehl and Schmid, Architects.




BALCONY PLAN, MEDINAH TEMPLE, CHICAGO, ILL.
Huehl and Schmid, Architects.




GALLERY PLAN, MEDINAH TEMPLE, CHICAGO, ILL.
Huehl and Schmid, Architects.




BASEMENT PLAN, MEDINAH TEMPLE, CHICAGO, ILL.
Huehl and Schmid, Architects.

DETAIL OF ENTRANCE ON OHIO STREET, MEDINAH TEMPLE, CHICAGO, ILL.
Huehl and Schmid, Architects.

the ceiling. The columns are of reinforced concrete.

The central dome is the most striking feature of the entire building, and is an object of rare beauty when illuminated by the chandelier, twelve feet in diameter, suspended from its center. This dome has an inner and outer shell, with an inside diameter of fifty feet. It is supported on curved steel trusses, each truss being nine feet deep at the ceiling line and three feet deep at the crown of

the dome. Here again, in the visible ribs of the dome, is found an unmistakable expression of structure. These ribs carry no ornament, and thus serve to emphasize the rich decoration of the included panels. The decorative value of the dome is still further enhanced by the stained glass windows, in green, red and gold, with which each of the panels is pierced. As is usual in large auditoriums, artificial lighting is depended on for illumination, the windows being designed more for decorative effect than for illuminating purposes. In addition to the chandelier suspended from the central dome, each of the other domes carries a smaller chandelier, while a cluster of lights is placed in the center of each ceiling panel.

The requirement of the Mahometan creed prohibiting the representation, even conventionalized, of human or animal forms, is rigidly observed in all parts of the building except in the parlors and smoking rooms. The effect sought in these rooms is one of quiet and repose. Brown and green are the dominant notes in the color scheme. In the north parlors the floors are of brown and white tile, the wainscoting is light brown, and the hangings are green.

The entire building, with the exception of the slight digression noted in the parlors, is carried out consistently in the Arabic style, a style as far removed from present-day requirements as could well be imagined. In spite of this fact the design carries with it the conviction that it is the logical solution of this particular problem. The building is composed of permanent materials throughout. A quality worthy of particular note is the honesty observed in the use of materials, all the brick, terra-cotta and concrete being frankly such, and not imitations of some other material.

THE NORTHEAST PARLOR, MEDINAH TEMPLE, CHICAGO, ILL.
Huehl and Schmid, Architects.

ENTRANCE DETAIL OF A HOUSE AT OAK PARK, SHOWING A REASONABLE MAXIMUM OVERHANG FOR EAVES.

(See illustration on page 354.)

# BUILDING the HOUSE of MODERATE COST

The Seventh Article

By Robert C. Spencer, F.A.I.A.

## THE ROOF.

THREE FACTORS determine the appearance of your roof—*design, color* and *texture.*

If the first is not good, no degree of beauty in the two latter can save you.

Now that we are assured that architects—even the busiest ones—*do* read, here's hoping that these lines may be read by some of the fellows who are careless above the eaves-line, and, judging from the cuts in the architectural journals, there are a good many of them.

The roof is eminently a characteristic and cardinal feature of domestic architecture. A study of the "Orders" may teach you a better sense of scale and proportion, but it stops at the roof.

In large monumental work, good simple roofing usually follows from the necessary symmetry and balance of the plan. But these houses, with their bays, dormers, porches and attic rooms, are quite another sort of problem

The house must be comfortable and "homey"—not too hard and arrogant in its feeling, and these former qualities can seldom be provided in a strictly formal and regular plan.

Yet the *ground plan outline*—excepting in its minor features — determines the *roof* plan, and, therefore, the roof lines and surfaces, while these in turn go far toward making or marring the mass of the house viewed as a whole.

In making plan studies for a house of any size, above that readily covered by a box-shaped and plain lidded scheme, every conscientious designer rejects otherwise perfectly good floor arrangements because they lead to fussy, forced or awkward looking roofs.

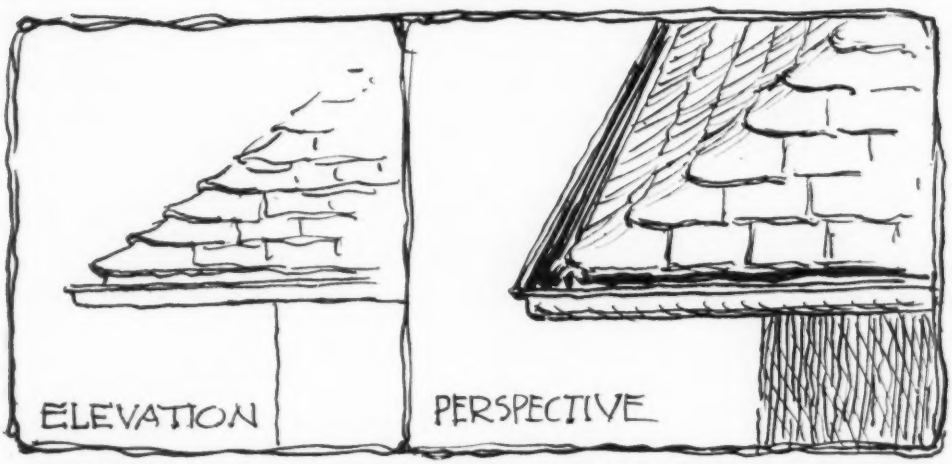
The square, or *almost* square type of house, he finds to be peculiarly difficult in its total mass.

As a covering for such a plan he finds a hip roof too nearly pyramidal without any ridge line worth mentioning.

His only salvation, and this is often but partial, lies in adopting a plain gabled treatment with a ridge line that counts toward ameliorating the boxiness of his mass.

In houses large enough to have a decidedly dominant longitudinal dimension, either of two paths may be chosen, as to design. The roof may be hipped or gabled, and from either path he may follow various related bypaths as to pitch, projection of eaves and the details of their treatment, Usually his roof must be more or less mussed up with dormers, the bane of American domestic architecture, yet apparently a necessary evil, at least in houses of the smaller and more economical type.

So-called "jerken-head" type of gable roof derived from old thatched form. An illogical variation of the simple gable, but sometimes rather effective, and a protection to the upper gable windows.




TWO ROUGH SKETCHES SHOWING MOULDED HIPS ON A "SHINGLE" TILE ROOF, (1) IN ELEVATION, (2) IN PERSPECTIVE.

As a troublesome feature of roof design, these will be discussed later.

If there must be finished rooms in the attic, or roof space, a gabled type of roof is usually indicated at the outset for adequate light and air.

It is, however, true that a hipped roofed scheme when of rather broad and generous dimensions may be dormered quietly and sufficiently for cross-draught in attic servants' quarters.

So, there can be no hard and fast practical rule to guide one's choice of the first two paths.

Often it is a question of personal predilection and feeling; of the look which one desires to give his building in relation to its site and environment.

Broadly, hip roofing, with its continuously level eaves line is the serene and quiet scheme. With umbrageous eaves, it is reminiscent of Italy and Spain, until too sharp in pitch as adopted when it becomes heavy-looking and cries for gables, or for a flattening of pitch at the eaves to emphasize the feeling that the main rafters rest solidly upon the supporting walls.

In the French *chateaux* of the best Gothic and early Renaissance periods, this change of pitch was always exquisitely given, albeit the overhang of eaves was modestly and trimly Northern, suggesting cloud and snow, rather than sunshine and rain, as do the spreading eaves of Italy.

In general, roofs of steep pitch suggest eaves of very moderate projection.

At the present time, we seem to be going in rather strongly for roofs of low or moderate pitch with eaves which are wide, often to the point of exaggeration. In this pursuit of heavy shadow, some designers apparently forget that bed rooms as habitable apartments need a certain amount of direct sunlight.

For the average house, a roof overhang of three to four feet will give ample shade and shadow during the heat of a summer's day and cover small bays or other minor offsets in the plan while allowing a fair measure of morning and afternoon sunshine to enter directly.

Hipped roofs seldom take kindly to a very irregular or broken plan. But where gables serve to open up attic space, a projecting unit in the plan is often valuable, if properly subordinated to the principal mass.

A gable, secondary to the main roof, which does not correspond to a break in the plan, however slight, always has a rather forced, awkward and illogical appearance. Yet, it is a common feature of carpenter-built houses and of some others.

But carpenter builders are, alas, not the only sinners against good roof design. Unity and harmony are recognized by the good workman as among the first governing laws of every art, however variously he may interpret them, or even

An awkward gable roof lacking preparation in the second floor plan for the cross-gable on the side, which is too large in proportion. The sketch shows a better treatment.

seem to violate them in his creative work.

If he be not a genius, his harmonies should be simple and obvious rather than occult or Wagnerian, verging upon discord.

There is in one of our great cities a large group of modern college buildings designed on Gothic lines, several of which are object lessons in inharmonious roofing. Hips and gables quarrel with each other upon the same building and the roofs of one building quarrel with another. Only a uniformity of material and a general similarity of pitch hold them in any semblance of good order.

Better flat roofs above an attic story than such a jarring striving for the picturesque.

Eaves rather too wide and heavy, and the roof marred by the large central dormer.

A not uncommon type of roof, which to the writer, is always awkward and stupid in appearance and which is seldom justified by practical consideration is the truncated roof with a flat central deck.

Happily the Mansard roofed cottage is a thing of the past, but American Colonial traditions have such lasting force in our domestic architecture that many homes are still being built with central railed decks. (The "Cupola" period, thank goodness, was short lived.) They remind me of a criticism made by the late Prof. Eugene Létang upon a design for a monumental entrance to a park by a member of the second-year class in design at "Tech" some twenty odd years

The use of a gambrel roof above two full stories gives a heavy and barn-like effect, even if the house (unlike the illustration) is well designed in itself.

A clumsy and over-eaved dormer effect common in many American suburbs. It is a type of "real estate" house, built to sell.

ago, a feature of which was a crowning balustrade. If any of the company of successful architects, who had in those days, the good fortune to be under his instruction, chances to read this, they can supply the sarcastic tone and peculiar French accent with which he ejaculated as he turned to this design: Ha!—this fellow has a bal-us-trade! Who *goes* there? *No body*."

And thus it is with the balustraded, new—Colonial roof—nobody goes there.

And the puny wooded balustrade catches and holds the snow, the joints open and the wood goes to decay.

Dormers have been already referred to as a necessary evil. They are not always so. It is true they distort the quiet simplicity of a good roof. But when well placed and designed, they often add to it a touch of interest and piquancy.

It has seemed hardly necessary to illustrate here with photographs the characteristically bad types of roofs and dormers. They are abundant in every suburb from Boston to San Francisco, and their variety is exceeding.

They break the laws of unity and harmony, in many and various ways, and it is oftener easier to say that they do not please the eye, than to say just why.

These are shades of architectural badness which are not plainly outside the pale of esthetic law.

Most offences in roofing can be set down in words so that even the interested layman can open his eyes, and see in daily walks what to condemn and what to praise—what to avoid when he builds.

The heavy-eaved, exaggerated dormer. It is one of a large Company in the "solid mahogany" village of Oak Park, and there speak a lot of Oak Parks architecturally remote from Cook County, Ill.

Most of these dormers are planted in the center of pyramidal hipped roofs and are gabled.

Harmony demands that *all* roofs, large and small, major and minor, be of one family on one building. *All* hips or *all* gables.

A house by Spencer and Powers at Oak Park, Ill., showing a reasonable maximum for the overhang of eaves. Roofed with light red shingle tiles and moulded hips. The main roof has a pitch of 5 in 8, and a maximum overhang of about four feet.

An artist can depart from this rule in certain cases without producing an unpleasant discord in his mass composition, but it is always well for him to hesitate. Small dormers which repeat against a rather ample background of roof surface may be either flat topped, hipped or gabled—regardless of the treatment of the main roof, particularly if the latter be of sufficient pitch to rise above the dormer skyline, except at very close range.

Of course, it *does* really seem almost

absurd to attempt to design or to advise another to design by *rule,* when the only rules which can be formulated in any field of art are subject to more exceptions than rules for the spelling and pronunciation of the English language.

But, nevertheless, occasional sad lapses on the part of well-known architects of acknowledged artistic power show the value of a good general rule in case of doubt.

Mistakes or weaknesses in mass composition and roof design not readily detected in elevations, are usually disclosed at once in a mathematically correct perspective study.

Rough free-hand perspective sketches are of comparatively little value as a check upon composition in plan and elevation of houses, or building of any type in which the roof is an important and conspicuous feature.

One always "fakes" these sketches—though perhaps unconsciously, to please his fancy as to the look of his building, and the broadest faking or the widest margin of freehand inaccuracy is in the roof.

With an accurate perspective, one can go back to his sketch elevations and correct them or discard before going too far with a mediocre scheme.

So I say to the young architect: get the habit of studying your work in accurate perspective. The perspective plan method is the most convenient where one wishes to design in a perspective study that which can be translated back into working drawings, and when mastered through frequent use, it is at least as rapid as any other.

But to return to the roof.

A roof, let us say, over a good spacious attic, lighted by gable end and dormer windows.

What do you require of the dormers? Light, cross draught, and, in the attic, bed room elbow room at least, and perhaps space for a dresser or a writing desk, with a clear height enough for head room and a trifle to spare.

The smaller and less conspicuous the dormers the quieter and more restful the roof as a whole.

A shingle roof with close-trimmed gable end, and eaves carried across it to accentuate the low horizontal lines of the cottage. The hip-roofed dormers are inconspicuous against the rather steep roof.

With a minimum height for practical use window sills set well up from the floor and an inconspicuous roof of its own, the scale of your dormers for the house of moderate cost will take care of itself. And at *least two* dormers on one side of a roof, unless set closely together, are better than one.

If several attic windows must be had close together, one broad single dormer is better than a crowded effect, both structurally, as well as in appearance.

For the small house, flat-topped metal decked dormers are, as a rule, less conspicuous in scale and close-range skyline than those with pitched roofs. This type of dormer is common in modern English domestic work.

In our own work we often see much striving for the cleverly odd or picturesque in dormers and dormer roofs. It is only in the small house of the "story and a half cottage type" with its rather steep roof and low eaves line that aggressively picturesque dormers may be rather effective, and a virtue thereby made of their importance in the plan of the bed room floor. So much for form.

The masonry character of a stucco coated house of hollow tile is emphasized by the substitution of tile coped gable ends for overhanging verges.

What of color and texture? A birds-eye view of a close-built typical American village or suburb, discloses a sad gray patchwork of roofs, unrelieved by cheerful color, except for a bit of lively but foreshortened wall here and there.

How different the warm ruddy roofing of a typical English or German town. Cheap lumber has deprived us largely hitherto of color as a beautifier of our roofs.

Not that shingled roof always lacks beauty of color to the extent that neutral tones are colors.

Artists delight in the cool, delicately dappled and undulating textured roofs bleached by the salt air of clean sea-port houses.

But inland where smoke and soot from railway lines and factories is added to the darkening effects of sun, snow and rain, a shingled roof acquires in a few years at most a sad, dirty, gray tone, gradually approaching a cracked, warped, decayed and blackened end at the early age of from ten to fifteen years. And the average of quality in shingles as in all other kinds of lumber is steadily becoming lower, as scarcity grows.

Cheapness in first-cost, however, will undoubtedly favor the general use of shingles for roofing in preference to more durable and beautiful materials for many years.

To the man who takes pride in building substantially and permanently, we can at least, however, safely say: "A tile roof with copper flashings will cost you about three times as much as a good shingled roof, and will last, with trifling repairs as long as the structure which it covers.

"If you and yours own this house with a tiled roof for over thirty years, it will cost you no more than the maintenance and repeated replacement of shingles during the same period. And during all these years, you will have a roof not only beautiful when new, but which in color and texture will grow richer, mellower and more pleasantly varied in tone and color every year."

And then, there is the solid satisfaction of feeling that you have a permanent weather and fire resisting covering over head.

A shingled roof, carefully painted a bright red may look like a tile roof at a considerable distance. But it does not deceive at close range, it must be re-

Doubling the shingles every seventh course gives a rather agreeable horizontal texture to a shingle roof.

painted every few years, and the owner *knows* that it is merely a cheap imitation.

It is true that paint somewhat protects the surface of shingles from cracking and warping, but it encourages decay from below, by closing the pores of the wood and preventing quick drying after exposure to rain or snow.

But, some one says: "If a shingle roof isn't good enough (cost, wear and looks, all considered) for a modern house of moderate size, why is a tile roof the only alternative? What about slate or asbestos shingles, or good tin, or even the various patented felt and paper roofings so extensively advertised?" The answer is not simple. Slate costs less than tile, is almost if not quite as durable, quality for quality and can be had in shades that are very satisfactory and agreeable if you don't care for red.

The red of slate is generally inferior to tile reds.

The various lighter slate grays, dull bluish-purplish and gray-green tones, may be effectually used by careful selection and judicious mixture where quiet, unobtrusive roof tone is desired.

The darker slates are rather cold and funereal looking, for a house, unless the roofs be of low pitch and, therefore, inconspicuous. Like tiles they ripen and mellow with years of exposure to the elements. Give them time enough in a fairly moist climate, say fifty or sixty years and with touches of moss and lichen in shaded surfaces, they may become delightfully soft, rich and colorful.

To appreciate the mature beauties of such permanent roof coverings as slate and tile, one must travel the unspoiled byways of Europe.

In America most of our more substantial construction is too rawly modern.

But we *are* beginning to build for our great grandchildren, or at least for some one's great grandchildren — to build houses durable enough to grow old gracefully.

All the modern so-called cheaper and better substitutes for shingles have their uses and advantages for certain classes of buildings or under peculiar climatic conditions.

None of them are really time-tested in comparison with tile or slate. Some have outlasted shingles, as for example, the so-called asbestos shingles, made of short fibre or amorphous asbestos and cement under enormous pressure.

All felts and papers no matter how impregnated appear to have a tendency to swell and buckle more or less with varying degree of moisture and temperature.

The gable of good pitch is particularly domestic in quality, and is always "indicated" where much finished attic space is wanted.

Architects are skeptical about them for domestic work and speculative builders of small houses and bungalows, who are always looking for "something cheaper and just as good," or something better at the price of shingles and are doing most of the practical experimental work in trying out the inexpensive substitutes.

In discussing and illustrating such roofing details as gutters, eaves, verge boards, etc., this article might be indefinitely extended, but there are so many practical and pleasing ways in which they can be designated and such a wide diversity of taste among architects that perhaps it is just as well to omit consideration of these points entirely from this article. In closing, however, it seems well worth while in view of the various different forms in which roofing tiles and tile trimmings for hips and ridges are made to discuss briefly their application to residence work.

Excepting perhaps for very large, unbroken roofs of rather low pitch, the so-called flat shingle tile seem to be in

better taste than the coarse interlocking or so-called Spanish patterns. The latter have a more or less heavy, coarse and brutal effect which seems somewhat out of key with the quiet domestic quality for which we look in a small house.

Properly laid, shingle tile is quite as tight and durable as any other form.

Quite as important as the choice of tile as to shape is the selection of tile for good color. The lighter, softer shade tones are more pleasing than the dark tones of very hard-burned clay. Tile may be had in these lighter tones which are quite hard enough for permanent durability.

It is a common and serious mistake to insist that roofing tile shall be selected and laid for practical uniform color and shading.

Within recent years architects have come to appreciate beauty in a variety of shading and texture in brick work. A somewhat similar variety in texture is quite as desirable on the roof as in the walls. Kiln run tiles should, therefore, be specified and the roofer instructed to mix the various shades as he lays them in order to avoid a patchy effect.

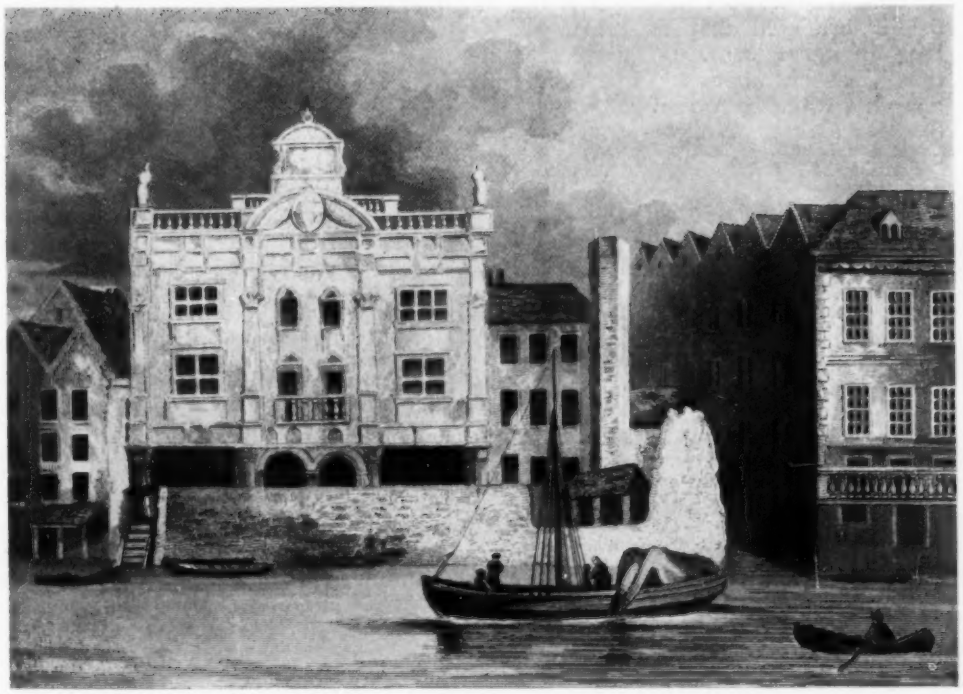
If the tile of a certain tone do not afford sufficient contrast, very pleasing results may be obtained by ordering a certain percentage of dark tiles from one factory and the balance in a lighter tone from another, mixing them up carefully at the job. This will produce a sufficient variety of texture.

Of course, there is no possible way of achieving in a new roof the beauty of the old time stained, moss grown roofs of England or Italy.

Many an otherwise good shingle tile roof has a coarse, crude appearance because the valleys are left open instead of being step flashed with close joints between surfaces, or because the hips have been covered with so-called hip rolls instead of moulded hip tile corresponding to the balance of the roof, as illustrated in the rough sketches on page 352. This latter method is the one usually employed in England.

To secure a satisfactory job of this character the roofer should be required to make full sized templets of sheet metal for the guidance of the manufacturer of the tiles. Even with the greatest care a percentage of the tiles burned in this shape for hips will probably be found too badly twisted for use, but the result is well worth some extra trouble and expense.

**Showing how effectively an octagonally planned bay window may be gabled. For the sake of roof harmony all the roof-included dormers are gabled, and were carefully studied in perspective. The one-story bay is the only jarring note.**



*Kind permission of Mrs. William Potter.*

THE DUKE'S THEATRE, DORSET GARDENS (From an old engraving).

# CONTRIBVTIONS TO THE HISTORY OF THE ENGLISH PLAYHOVSE

## BY HAMILTON BELL

## II ON THREE PLANS BY SIR CHRISTOPHER WREN

TWO OF THE important London theatres of the seventeenth century are known to have been built by Sir Christopher Wren and the earliest of these is regarded by no less authorities than M. M. Contant and de Filippi as the prototype of the modern theatre.

I have some reason to hope, as this paper will show, that I may have traced a partial plan of one of them at least.

The great fire of London in 1666 wiped out the precinct of the old Whitefriars Monastery and with it a theatre variously referred to as the Whitefriars, Salisbury Court, and the private house in Dorset Court. The center of the dramatic world had by this time moved westward and was established in and about Drury Lane, between which and Lincoln's Inn-Fields the two patent companies, Killigrew's King's Servants and Davenant's Duke's Servants had taken up their abode, the former in a new theatre in Brydges Street, which was later to be known as the historic Theatre Royal Drury Lane and the latter in Lisle's Tennis Court in Portugal Row. Sir William Davenant had from the very beginning of his career as a manager shown a tendency to mount his productions with con-

siderable elaboration, so that it is rather to be wondered that he remained so long in these confined quarters than that he should about 1668 have availed himself of the opportunity afforded by the clearance in Whitefriars to engage Sir Christopher Wren to build him a new and magnificent play house in Salisbury or Dorset Court. Despite its distance from the fashionable center the convenience of the new site must have offset other drawbacks; by securing a plot of land fronting on the river, then and for more than a century to come, still the great highway of the metropolis, at the head of Dorset Stairs and connected by Salisbury Court and Dorset Street with Fleet Street, always the main artery between the city and the west end of town, he drew his audiences both from the citizens and the Court. Moreover, he was able to set his building in an open square unencroached upon by other houses, a consideration which doubtless weighed greatly in the years immediately following the disastrous fire. This theatre was not finished and opened until 1671, after Sir W. Davenant's death. In three maps of the period, one in the Soane Museum of which I give a tracing, in John Ogilby's map of 1677, and in Morden and Lea's of 1682, the Duke's Theatre is shown occupying this eligible position. The view given of somewhat later date shows the river front of it.

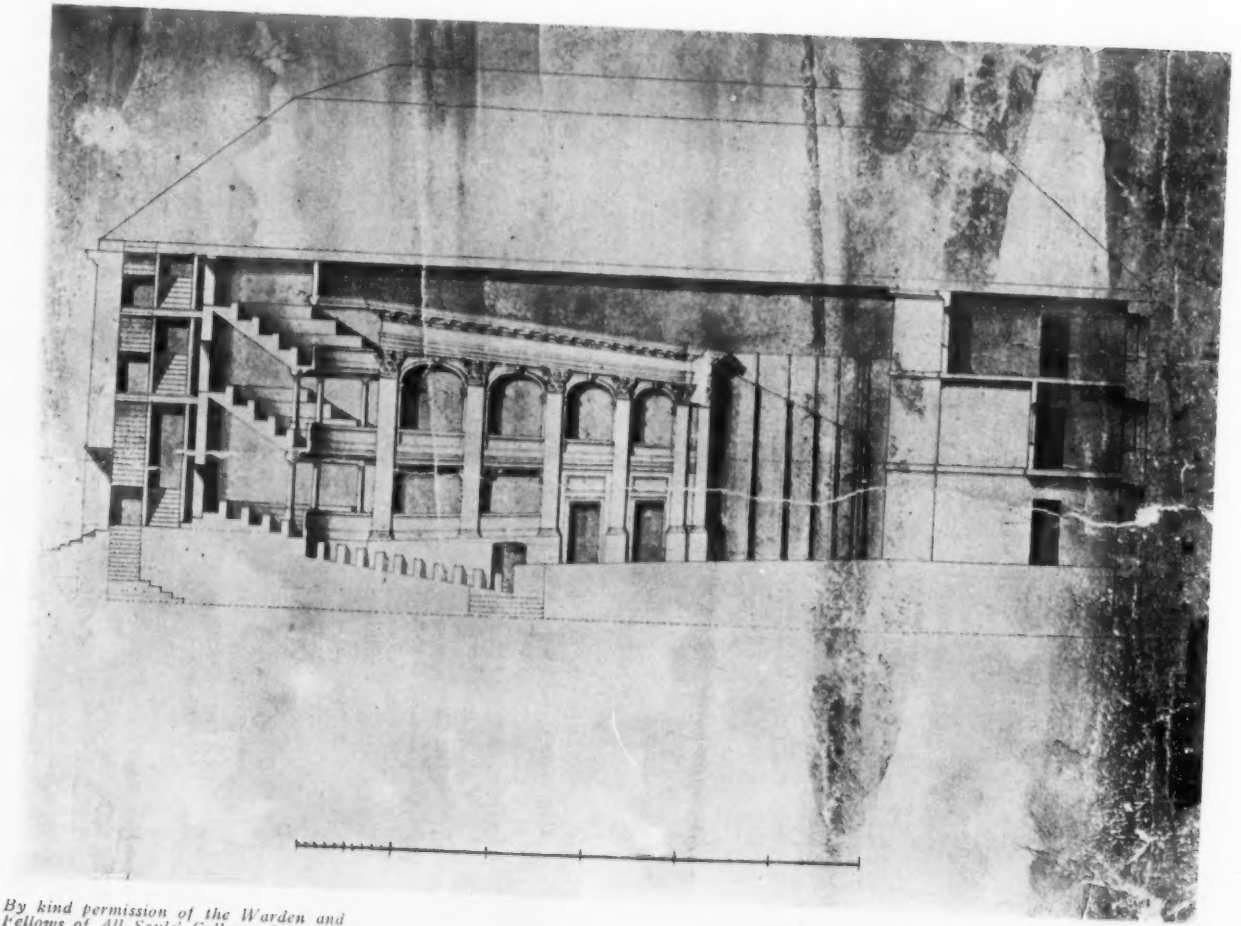
I have nowhere found the dimensions recorded but it is stated to have been larger than Killigrew's first theatre in Brydges Street, which we know to have been 112 feet from E. to W. and 59 feet from N. to S.

In the first edition of Elkanna Settle's Empress of Morocco published in 1673 are several views of the outside and proscenium of this theatre. That of the outside is curiously corroborated by the evidence of the map in the Soane Museum where (the principal buildings being shown in a bird's-eye perspective) the Duke's is readily recognized by its peculiar façade. In the margin of Morden and Lea's map, too, is a little sketch showing it.

The plan in Ogilby's map is large enough for us to trace with ease the four columns of the front with the steps leading up to it; and the turrets at top. This façade had an overhanging first floor carried on four Tuscan columns forming a portico to shelter the entrance; above these were four Corinthian engaged columns with windows between and crowning the cornice which was carried up in the centre in an arched pediment, were two turrets. The whole composition being dignified, in fine proportion and eminently characteristic of its great architect.

M. M. Contant and de Filippi, on what authority they do not say, state, that according to the engravings, this theatre received the light of day from large windows which served to illuminate at once the stage and the salle. As we know, even in Shakespeare's day, the private or entirely enclosed theatres were artificially lit, they would seem to have assumed, not merely that the large windows shown in the facade opened from the auditorium, which is not necessarily, nor even likely to have been, the case; but that the theatre standing isolated had windows on all sides. There is no evidence either for or against this assumption, so far as I know, except that in the minute perspective at the foot of Morden and Lea's map there would seem to be windows on the east side of the building. Their description of the interior is as follows and is obviously based on, and may be checked by, the illustrations in the Empress of Morocco mentioned above:

The proscenium was rectangular, without columns, and did not reach to the full height of the salle; between its cornice and the ceiling, above the royal arms, was introduced a sort of box (*loge*) facing the public, flanked by enormous caryatides and surrounded by festoons. This was without any doubt the music room where the orchestra sat. In front of the proscenium to right and left of the space probably reserved for the orchestra were two large doors of the same style as the rest of the theatre and sur mounted as in the Theatre of the Tuileries by two tribunes or balconies, making large windows to light the scene, for, according to the engraving the *theâtre*



*By kind permission of the Warden and Fellows of All Souls' College, Oxford.*

SECTIONAL "PLAN 81" FROM THE ORIGINAL DRAWING BY SIR CHRISTOPHER WREN.
Possibly for the Drury Lane Theatre, built by him in 1672-74.

(in French meaning stage), received the light of day. The boxes, placed behind these two interior balconies, probably ran round the salle in two rows, separated by the large windows which are to be seen on the design of the façade and which served to light at the same time the stage and the salle.

It is amusing to note how innocence of English theatrical usage has led these two French architects astray. As already noted the box with its three curtained openings carried on a projecting shelf-like bracket over the whole proscenium arch was the Music Room, which, as Mr. W. J. Lawrence has ably shown, there is every reason to believe had occupied that position from the days of Queen Elizabeth till even later than the building of the Duke's Theatre; he advances ample evidence to show that in this particular building there is no doubt of the fact.

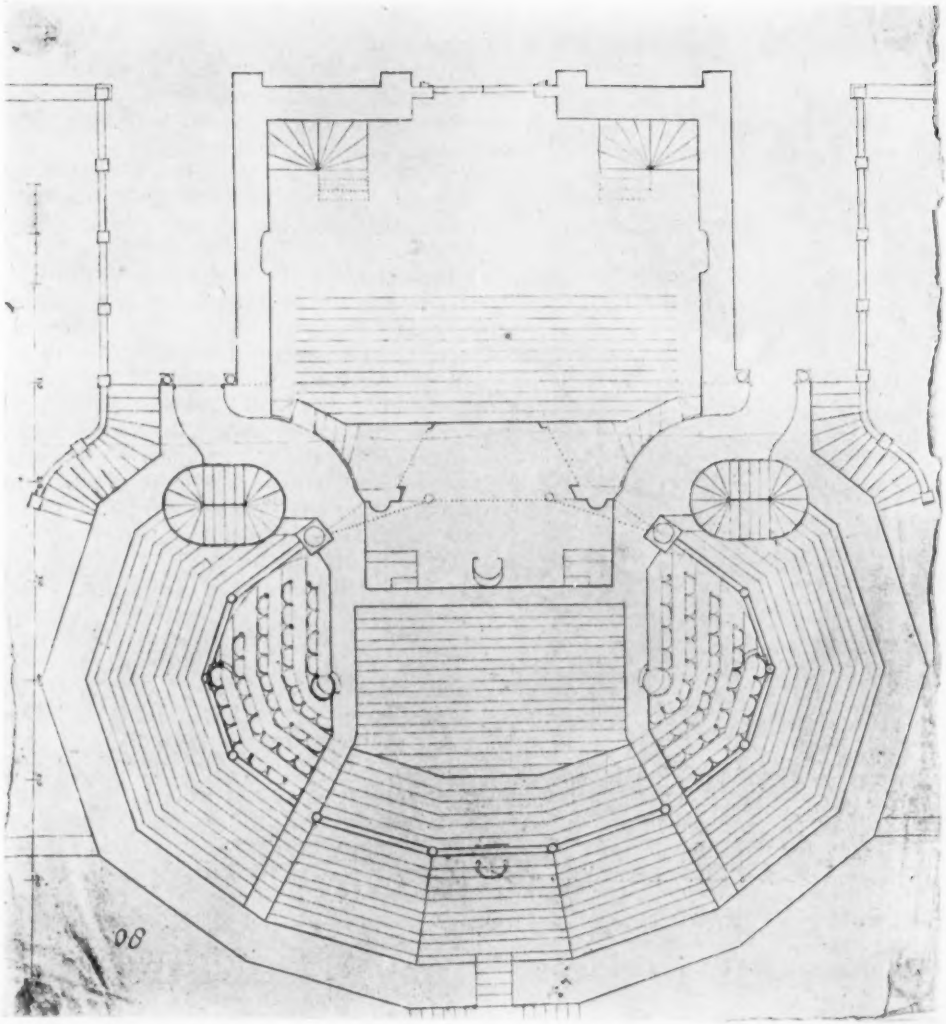
The space, probably reserved for the orchestra, was the projecting apron, also an English traditional feature, though by the eighteenth century not uncommon in France also. Curiously enough in this very theatre, when Shadwell's opera based on the Tempest was given in 1674, "the front of the stage is opened and the band (greatly enlarged for the occasion) placed between the pit and the stage." The fact of this specific instruction appearing in the printed play goes far to prove that the condition for which it provides was exceptional.

The doors with the balconies over them on either side of the stage are more familiar to them through having existed in the theatre built in 1660 in the north Pavilion of Catherine de Medicis of the Tuileries, turned into a Salle de Seances in 1792, when the Convention was signed in it, but their imagination of the rest of the house is fantistic to the last degree; whether in plan ovoid or rectangular, I venture to think probably the former, it was undoubtedly built with the then usual English arrangement of two tiers of boxes, surmounted by a gallery, the only private boxes being grouped about the proscenium. In the English theatres of the XVII and XVIII centuries the boxes were not usually partitioned off, but like our balconies; even when partitioned, single seats in them were sold as in Continental Europe at the present day; even the Royal box, when unoccupied by Majesty, was let to commoners; Mr. Pepys sat there on occasion.

This theatre flourished till the amalgamation of the two patent companies in 1681, when it fell into disuse. The last mention of it I have found is that in 1698 a lottery was drawn in the deserted Theatre Royal in Dorset Gardens. Mr. Lawrence gives 1709 as the date of its final abandonment; though it must have stood for many years after.

In the Library of All Souls College, Oxford, among the priceless but sadly dilapidated treasure of Sir Christopher Wren's drawings are three plans and one section of theatres; none of these are likely to be studies for the Duke's Theatre but in two of them the auditorium is shell shaped or ovoid and in one it consists of concentric semi-circles of seats in a rectangular hall. In two of these plans and in the section the staircase and lobbies are at the rear of the auditorium, thus cutting off the exterior facade with any windows it might contain from the body of the house. The same general arrangement occurs in a plan of Vanbrugh's old opera house in the Haymarket, opened in 1705, which I found in the Soane Museum; there is a tradition, how well founded I cannot say, that Sir Christopher was concerned in the planning of this house also.

To return to his plans at All Souls; Number 80 is a very complete and studied plan for a theatre with a shell shaped auditorium, having eleven sides; the result being that many of the seats would have had a very restricted view even of the "apron," in theatrical parlance that part of the stage in front of the proscenium arch which projects well into the pit, and none at all of the scenery. Indeed, except for the fact that there is indicated a very large and deep stage with a singularly narrow proscenium opening, this would appear to be a study for an academic theatre like the Sheldonian at Oxford, built by the same architect in 1664-9. Pillars and staircases indicate provisions for galleries.



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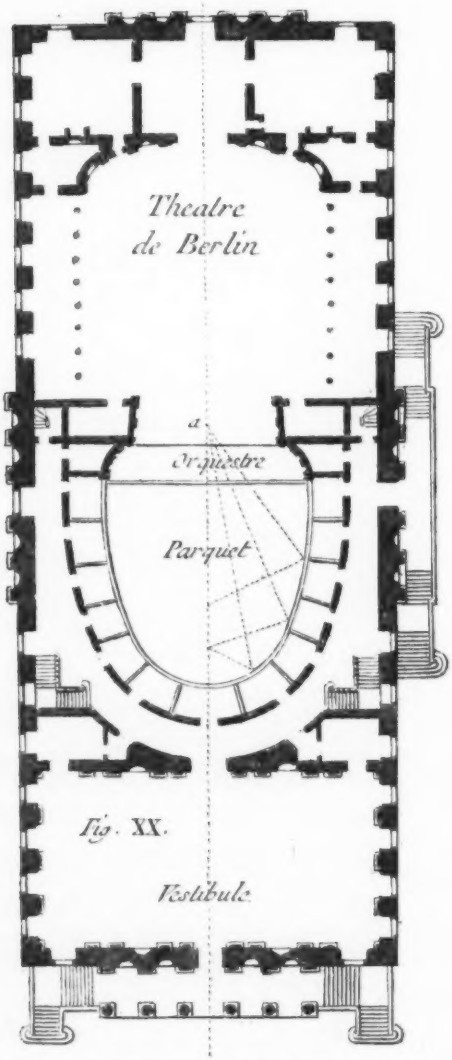
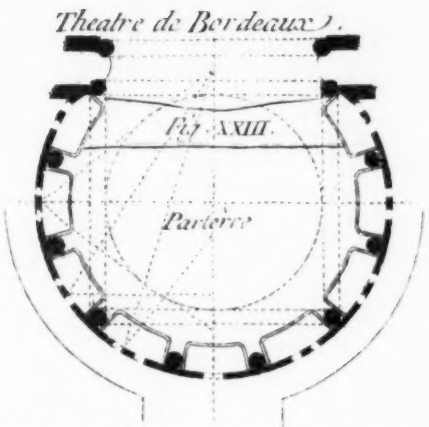
"PLAN 80," FROM THE ORIGINAL DRAWING BY SIR CHRISTOPHER WREN.




PLAN OF THE ROYAL THEATRE, BERLIN.
(18th Century.)

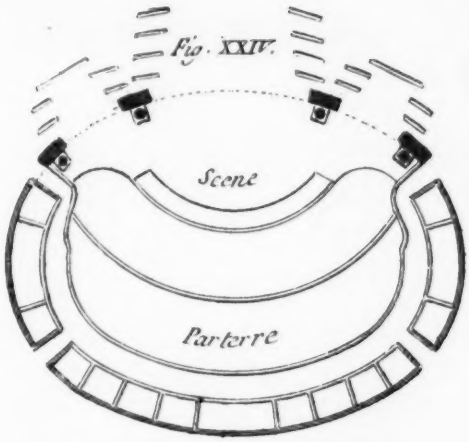
As an interesting commentary on the bad sight lines of both Inigo Jones' plan before described and this of Sir Christopher's, we may for a moment take a glance across the channel. In an Essai sur L'Architecture Théâtrale par M. Patte, published it is true a hundred years later than the time we are considering, we find a plan of a projet d'une Salle de spectacles, pour un Théâtre de Comedie by M. Cochin, Graveur du Roi, wherein he proposed to adopt the plan of the theatre at Vicenza, giving as his reasons, that in the theatres of his day while the boxes at the back, in the centre of the house, gave the best view of scenery and spectacle they were too far away for the occupants to hear clearly. He proposed to develop the half oval of Vicenza into an entire oval. Having got so far he realized that a large proportion of the spectators would not be able to see into the scene at all, so he planned to build a fixed *proscenium* or scene of architectural features with three large openings, the centre 24 feet wide, the two others 10 feet each, through which the scenes should be visible. He argued that the advantage of this plan would be, first, that every part of the audience would have its own background to look at, but principally that it would facilitate an adherence to the laws of unity and that by it a Temple, a Palace and a Tomb might all be shown at once, in case of the need, not infrequent in the classic tragedies of France for such a *decor simultanée*.

M. Patte demolishes this and M. Cochin's other arguments with much cogency, pointing out, among other objections, that his actors would find themselves isolated in the middle of the spectators and in a neutral ground so far removed from the scenery, that it would be difficult, if not impossible, to connect them with the particular background appropriate to any given moment; thus indicating his unfamiliarity with the customary British front stage, as it has been called in the Elizabethan play houses or in more modern parlance, apron. This plan was so far as I know never carried out, but the famous theatre of Bordeaux, built in 1773-80, regarded as the chef-d'oeuvre of Victor Louis, the architecture must be as bad as this plan of Sir Christopher Wren's, from the point of view of the spectator. Its circular salle must make it quite impossible for many in the audience to see any depth within the scene. This theatre, on account of its great architectural magnificence, was not without its effect on the architects of the New Theatre in New York, where a similar state of affairs resulted from the employ-




*Kindly lent by Brandner Matthews, Esq.*

PLAN OF THE THEATRE OF BORDEAUX.




A THEATRE PLAN BY COCHIN.

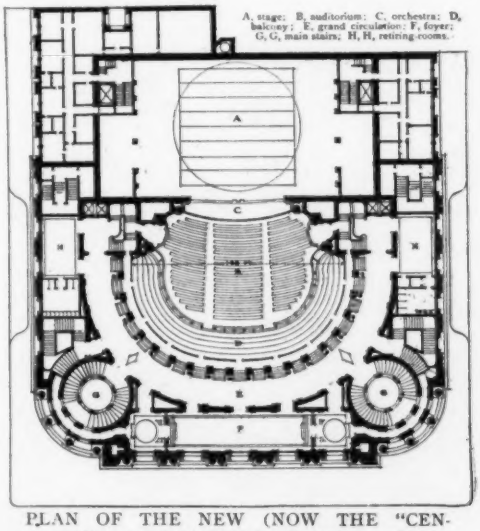
ment of a shell shaped auditorium, curiously like this of Sir Christopher's. Although we had a stage depth of nearly 70 feet it was found necessary to confine the acting space and to set any parts of the scenery which were so important to the action of the play as to be necessarily visible to every member of the audience, within a triangle the apex of which could be no further than 21 feet from the curtain line. The blame for this state of affairs should not be laid on the shoulders of the architects, but where it belongs, on those of the late H. Conried, who was responsible for the following conditions:

The proscenium opening was to be 48 feet wide; the front of the first tier of boxes, in which were to be twenty-two boxes each 6 feet 2 inches wide, was to be 65 feet from the footlights; and every occupant of these was to see a spot 30 feet within the proscenium arch. Add to this the requirement that the orchestra floor was to seat 600 persons and it becomes obvious that the only dimension which permitted of expansion was the width.

The proscenium opening had subsequently to be reduced to 42 feet, which was still enormous, and the result was the state of affairs described above. Hence we may see that Wren's plan is not so preposterous as it at first appears since more than three centuries after his death one of the most distinguished architectural firms of the twentieth century could perpetrate a similar one.

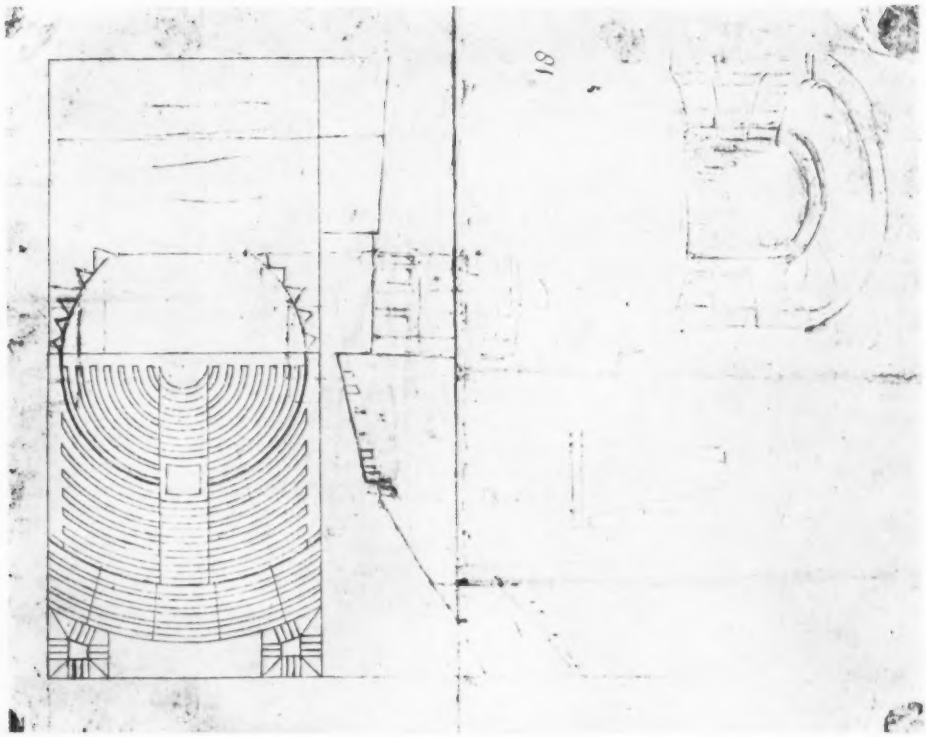
The Theatre Royal of Berlin, of which M. Patte also gives a plan, must have been nearly as bad, although its lines are more like those of the New Theatre; indeed he comments unfavorably on this defect.

The next of the All Souls drawings, Number 82, is a very rough block sketch for a theatre but is much more modern in treatment. The Salle is still of the familiar ovoid shape, the stage apron cut-




PLAN OF THE NEW (NOW THE "CENTURY") THEATRE, NEW YORK CITY.

Carrère and Hastings, Architects.



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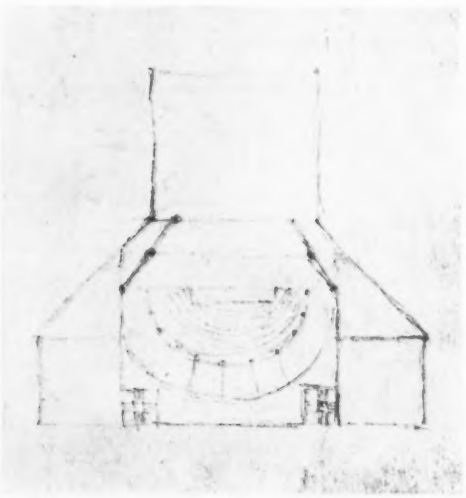
"PLAN 81," FROM THE ORIGINAL DRAWING BY SIR CHRISTOPHER WREN.



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"PLAN 82," FROM THE ORIGINAL DRAWING BY SIR CHRISTOPHER WREN.

ting clear across its longer side; there are indications of two boxes on a side in the flaring proscenium, but no doors therein; the galleries are carried by columns dividing them into ten bays, in three of which are suggestions of box partitions. The pit seats are indicated by curved lines conforming to those of the house and an enclosure presumably for the orchestra projects from the stage front into the middle of the pit.

Staircases are shown to right and left behind the wall of the auditorium and what are probably two large crush rooms, such as may be found in the older theatres of Europe, extend on either side of the house, passages from them leading to the stage.

The third plan, numbered 81, shows a rectangular building more than twice as long as it is broad; of this the auditorium occupies rather more than half. The pit seats are arranged in concentric semi-

circles and those in the boxes in segments of circles all struck from the same center. In the middle of the house is a square space probably a royal box or dais as provided in Inigo Jones' plans for the Court Masque at Whitehall. The most interesting parts of this drawing are the faintly pencilled suggestions for the section and the elevation of the proscenium arch. This is enormously deep and flaring and would seem to provide for three tiers of four boxes each, on the apron. The arch itself is flattened and segmental. The apron is level, but the stage behind the proscenium line has a distinct rake from front to back and is strangely raised a little above the apron.

The pit slopes up from the front to the beginning of what in those days was called the boxes, though there is no indication of anything above these, where the pitch to the back of the house becomes much steeper. There is a division or railing indicated, cutting off the four last rows of seats from those in the front of this amphitheatrical arrangement. Above these again the section indicates a gallery, only one so far as I can see, rising at the same steep angle to the back wall of the building, over the passage or foyer at the rear of the boxes. It is served by two staircases, one on each side of the house. Over the center of the Salle is indicated either a hanging canopy, above the royal state, though it would seem too high for that, or a corona of lights, or else some sort of central skylight shaft; this is not impossible as we know that there was such a contrivance in the first Drury Lane theatre, the King's house as Mr. Pepys calls it, from his complaints of the rain and hail beating down from it into the pit. The whole plan with its section and elevation seem to me to be of very great interest and importance. But by far the most valuable, as it is the most finished of these drawings, is that numbered also 81, although it has no connection with this plan. This is in every way a familiar scheme for a playhouse of the modern type. It is a complete and thoroughly studied and rendered section of the building and scales 112 to 113 feet in length outside, which corresponds so nearly to the known dimension, 112 feet, of Killigrew's first theatre in Brydges Street, Drury Lane, that I am almost tempted to consider it a study for its successor, which Sir Christopher Wren built in 1672-4 after the destruction by fire of the original; there is an additional piece of evidence, if I may give it so weighty a title, to which I shall come in a moment.

In the section before us the stage with its apron and tiring rooms occupies 64 feet with a 3 feet space for the orchestra in front again; leaving 56 feet for the salle and 8 feet for lobbies, staircases, etc.

The stage projects into the pit 17 feet in the form of an apron.

The cornice is carried by an order of Corinthian pilasters, six on a side, with boxes in two tiers (except on the apron, where two doors on each side replace the lower boxes) between them. The fronts of the galleries are curved in plan and the top gallery runs up through the cornice to afford sight lines for the rear seats. It is not easy to decide whether or no the ceiling rested on the cornice or was above it. In the pit, which slopes up towards the back, are ten rows of seats and there are four rows in each of the three galleries. The staircases are all behind the auditorium wall which is shown pierced with doors into the corridor foyer.

The drawing is inscribed "Playhouse." The stage rakes from the front edge of the apron clear to the back of where scenes are indicated as standing, beyond that to the back wall of the house it is shown level; the tiring rooms being thrown forward over this portion of it, i. e., there are none on the stage floor, one on the floor above and one on the floor above again. They have windows looking inward on to the stage as well as out to the air. Over the ceiling of the stage and the house is a loft and an enormous mansard (not shown in section) covers the entire building.

This drawing reopens a question which one was disposed to regard as settled. Mr. R. W. Lowe in his life of Betterton contends for the existence of four permanent doors in the proscenium of the sec-

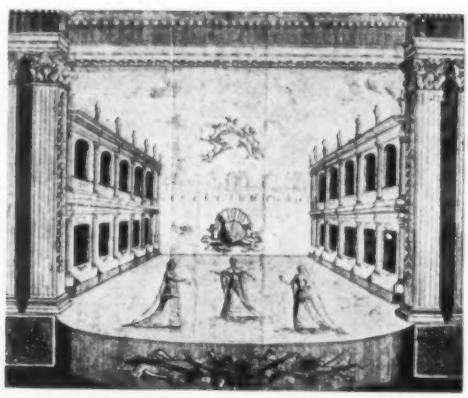
ond Drury Lane theatre, on the strength of a passage in Colley Cibber's apology describing the cutting back of the apron about four feet by Chr. Rich in about 1696 or '99. It runs: "The former lower doors of entrance for the actors were brought down between the two foremost (and then only) pilasters, in the place of which doors now the two stage boxes are fixt."

This drawing even if not for Drury Lane, which the presence of more than two pilasters would seem to deny, appears to substantiate Mr. Lowe's contention, although I think that Mr. Lawrence, his opponent, has demonstrated that in any case four doors were an exception and that two, one on each side, as in the older Elizabethan platform stage were the rule.

Now for my second piece of presumptive evidence that this is a sketch for Wren's Drury Lane theatre. It will be noticed that there is in the drawing no indication of proscenium or curtain line; a curious hiatus in the cornice would suggest, either that the architect had not thoroughly studied this portion of his design, although the rest of it is so complete that such an hypothesis is almost untenable, or that the upper part of the proscenium was for some reason unknown, probably theatrical, purposely left bare to be supplied by a temporary drapery or painted valence.

There exists in the British Museum the frontispiece dated 1674 to the French opera of Ariane or the Marriage of Bacchus with which this playhouse opened its door in that year. It shows us a square pilaster based on the apron on either side of the stage opening, of the same type as those in Sir Christopher's section, but fluted, which his are not, and without plinths, which his have. These are drawn in a sufficiently correct perspective but the strip of cornice which connects them has no visible thickness and might easily represent a canvas valence such as is not unusual even in theatres of the present day, to mask the top of the scenes.

I am well aware of the rashness of trusting to these frontispieces to published plays and (particularly in view of the inaccuracy of this one in the matter of the pilasters) should not dream of basing a theory on the bare evidence of one of them. I merely submit that there is a coincidence.



THE FRONTISPIECE OF "ARIANE," SHOWING THE PROSCENIUM OF DRURY LANE THEATRE, 167-(?).

# WHAT DO WE KNOW ABOUT LIGHTING?

## A STUDY THEORETICAL, SCIENTIFIC & PRACTICAL

By F. LAVRENT GODINEZ, Consulting Lighting Specialist

### II.—ELEMENTS OF THE TECHNIQUE OF LIGHTING.

NOTE.—The purpose of this article is to illustrate certain axiomatic facts of an elementary nature bearing on light sources, distribution of light therefrom, and laws of reflection. Following these necessary preliminary studies it will be possible to direct a discriminating knowledge upon the physical and optic properties of illuminating glassware. Elementary as some points brought out here may seem, a thorough understanding of them is essential for the reason that they are involved in all questions of lighting. In addition to the exposition of more advanced and intricate principles of sources, reflection, diffusion, etc., etc., in other articles, the analytic study of specific installations will be taken up, as well as the design of fixtures, practically and esthetically considered, and should the interest of our readers warrant it, a study will be made of the lighting of specific types of buildings, such as schools, libraries, hospitals, banks, show-windows, factories, etc., etc., as well as street lighting and church and theatre lighting.—Editor.

To use artificial light in aiding architectural expression, and with the freedom of the artist's brush, one must first acquire technique.

This must be accomplished without imposing restraint upon imagination, or originality, since in lighting these are the qualities which distinguish the work of the artist from the empiricist. Hence a consideration of narrow, theoretical, or empirical data is to be avoided.

From the architectural viewpoint there is no preconceived method of lighting an interior, and the illuminating engineering dogma of always expressing lighting in terms of energy, or intensity of light per square foot, tends only to produce ugly and commonplace monotony. The importance of cultivating one's ingenuity and imagination cannot be over emphasized. Consider first the *effect*—a picture for the eye—then as to *cause*, apply your technique as the artist does his colors.

The mechanical piano (technique exemplified) in the hands of the unskilled player becomes an instrument of torture; whereas, influenced by a personality capable of true musical appreciation, it is a medium of rare artistic expression. Similarly with lighting—technique is merely a means to an end. Given a person of inartistic appreciation, an alien to the Beaux Arts, and whether the *means* be a pianola—with its flawless technique—or the lighting formula of the empiricist—the *end* will be equally offensive and fundamentally unsatisfactory.

There is no interior of such insignificance but that the artificial light, intelligently applied, will not raise it to a higher plane of individual attraction, and this result can always be attained with due regard for legitimate economic requirements.

Let the designer apply the following logic in a general analyzing of lighting conditions and the end will justify the means. All ambiguities, theoretical vagaries and technical misconstructions have been eliminated, the treatment being confined strictly to a presentation of essentials.

Architectural expression demands va-

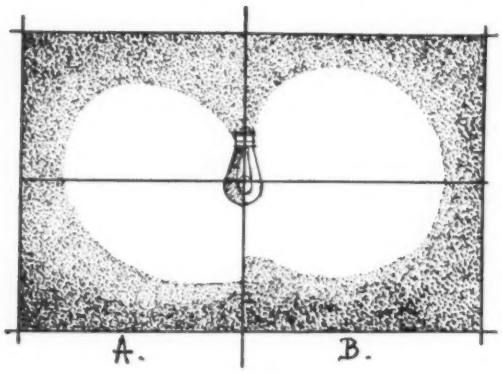



Figure 1.

(A) Light about carbon filament lamp, frosted glass, unshaded.
(B) Light about same lamp, clear glass, unshaded.

rious modifications of direction, intensity and color of lights—hence, *avant tout*, a consideration beginning with the light source itself is necessary.

Fig. 1 represents the typical distribution of light about a carbon filament electric lamp. Note that the greatest candle-power is on the *horizontal*. In other words, the lamp gives very much less light from the base and tip end than it does from the side. This is quite natural, since the light radiating surface is formed by the inner wire, or filament, and there is much less wire in the loop near the tip than on the sides. Some light is also cut off by the base. The important thing to remember is that the rated candle-power of a lamp is on the horizontal, and that from the top and the base very little light is radiated. This is even more marked in Fig. 2, showing the distribution of light about a tungsten

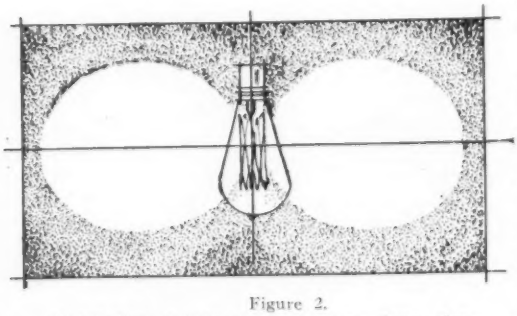


Figure 2.
Distribution of light about a tungsten lamp, clear glass, unshaded.

lamp. Here owing to the greater number of inner wires, and their method of support, there is practically no light radiating surface near the lamp tip which is indicated by the distribution of light.

Hold any electric lamp above a white card tip downward and then turn the lamp on its side. The increased light thrown on the card is surprising. This does not mean that lamps should be placed in horizontal positions or that reflectors are advised in "all cases" to redirect the horizontal candlepower downward, but is mentioned to impress the fact that the greatest candle-power or such illuminants is their rated or *horizontal* candle-power.

This same observation applies to gas lamps. Fig. 3 shows an upright incandescent mantle, as well as the inverted type. The inverted mantle distributes more light below the horizontal, owing

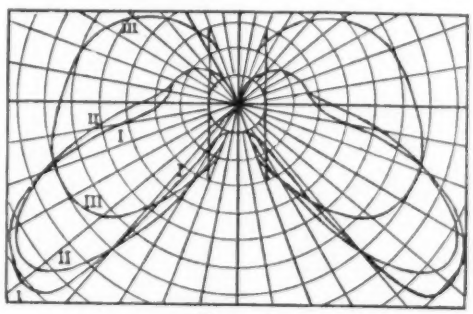



Figure 4.
Light about an arc lamp.
(I) Without enclosing glass.
(II) With ground glass cylinder.
(III) With opal glass cylinder.

to its greater light radiating surface, at the semi-spherical mantle tip and the absence of impedimenta like the burner mechanism of the upright mantle.

It will be interesting in another article to discuss the *color values* of different light sources, as these definitely affect architectural environment.

Bearing in mind these facts, it is of interest to note what effect glassware has, fundamentally, in modifying the distribution of light about a source—and particularly whether such re-direction of light meeting utilitarian requirements can be effected without neglecting important esthetic considerations.

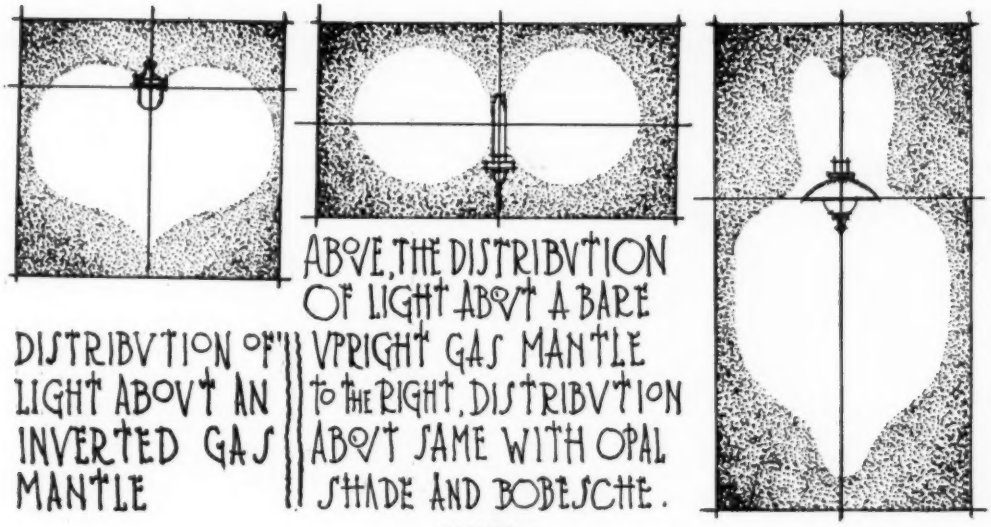

DISTRIBVTION OF LIGHT ABOVT AN INVERTED GAS MANTLE
ABOVE, THE DISTRIBVTION OF LIGHT ABOVT A BARE VPRIGHT GAS MANTLE
TO THE RIGHT, DISTRIBVTION ABOVT SAME WITH OPAL SHADE AND BOBESCHE.

FIGURE 3.
Distributions of light about different types of gas mantles.

In Fig. 4, outline I shows the distribution of light about a bare arc lamp, while outline II indicates the change in distribution caused by placing a cylinder of ground glass over the arc. This causes a slight loss by absorption, but practically no change in distribution. Outline III, however, shows a marked change in distribution caused by placing a cylinder of opal glass over the arc, there being considerable light above the horizontal, where there was none before.

We are not at all interested at present in the suitability of these various distributions for any particular application, but only in the *change* in distribution produced by the action of the enclosing medium.

The question of appearance is, however, of great interest, and that is very definitely shown by Fig. 5. The use of ground glass is absolutely opposed to architectural expression when used as indicated. The architect's idea, for example, is of a lighted globe on a capital, indicated in the line sketch, but in the first photograph the relative proportion of the ball and capital is entirely distorted by the action of the ground glass, which, instead of conveying the expression of a uniformly luminous spherical form, reveals a glaring spot of white light within a dismally defined outline. The second photograph in Fig. 5, however, shows the more artistic and pleasing appearance of opal glass which conveys the architect's idea in terms little differing from his drawing.

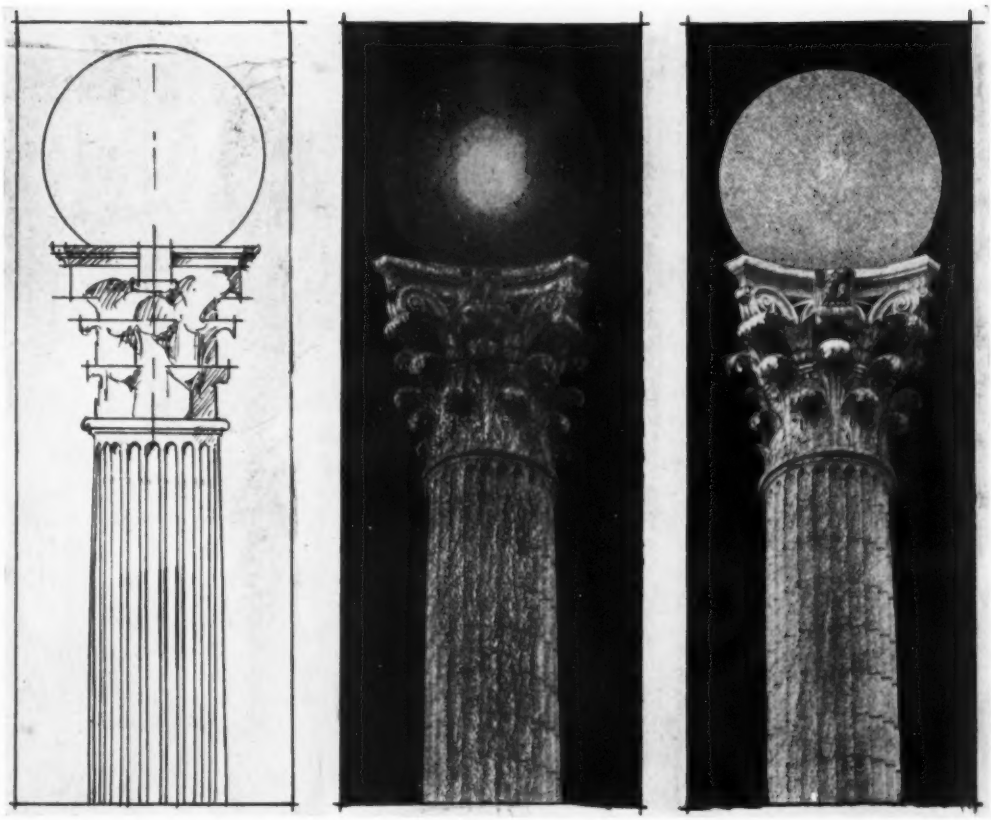
The reason for the superior diffusive action of opal glass (made by all glass makers) is on account of minute particules of opal suspended within the structure of the glass—which aids materially in giving better diffusion.

As the result of an original research by the author to determine the transmitting and reflecting phenomena of glassware,* using the ultra microscope, Fig. 6 shows a micro-photograph of ground glass, known as CRI (crystal roughed inside) and the effect of its surface roughening.

Figs. 7 and 8 indicate the effect of *light* and *dense* "acid etching," a surface treatment which with plain glass only aggravates the "spot of light" effect.

In Fig. 9 the heavy line indicates the typical distribution of light about a bare

*"Modern Requirements of Reflector Design." Transactions of the Illuminating Engineering Society, Vol. 6, No. 8, p. 923.



I. II. III.

FIGURE 5.

(I) Indicates the architect's intention, (II) the negation of this idea by the use of the wrong kind of globe, and (III) its expression by the use of the correct kind of globe.

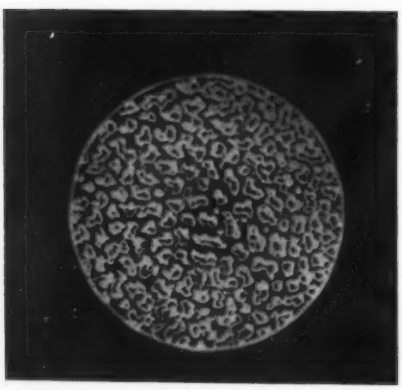


Figure 6.
A micro-photograph of ground glass.

electric lamp, and the light broken line, the slight modification effected by a ground glass globe.

Fig. 10 shows the suspended particles of opal within the structure of opal glass.

Fig. 11-E represents a ball of ground glass and R a source of light—any emergent ray (I) is transmitted through the glass without having its direction changed, or its intensity greatly reduced, and with a slight dispersion $r^1$-$r^2$-$r^3$-$r^4$) at the front of emergence.

This accounts scientifically for the ugly "spot of light" effect characteristic of ground glass, which is shown diagrammatically, by Fig. 12, the visual angle, "spot brightness," and lack of

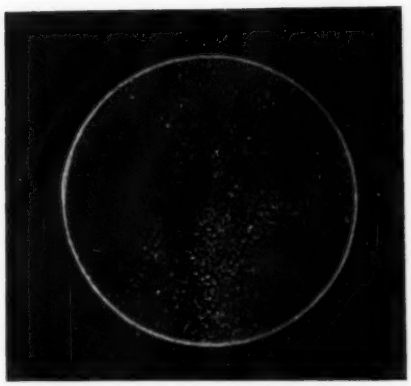


Figure 7.
Micro-photograph of light acid etching on ground glass.

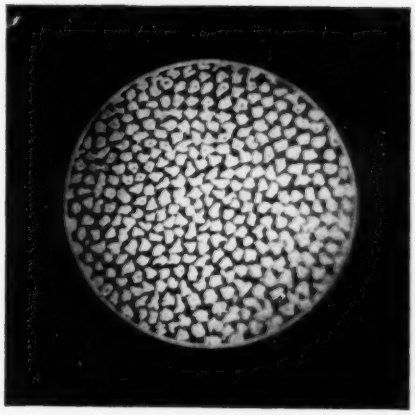


Figure 8.
Micro-photograph of dense acid etching on ground glass.

uniform luminosity being clearly defined. Fig. 13 tells a different story. Any emergent ray from within the globe

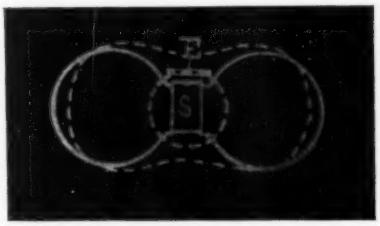



Figure 9.
The heavy line shows light about a bare electric globe, the broken line its modification by a ground glass globe.

of opal glass (E) is split up as shown by ($r^1$-$r^2$-$r^3$-$r^4$) with a single directionally unchanged ray (I) of greatly reduced

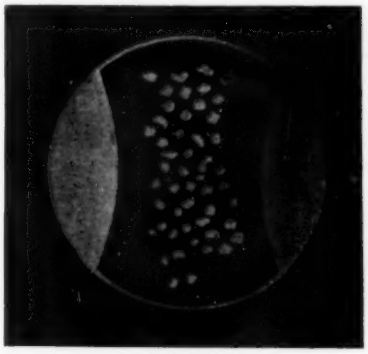


Figure 10.
A micro-photograph showing the suspended particles of "opal" in opal glass.

intensity. Fig. 14 illustrates diagrammatically just how the diffusion of an opal ball conveys to the eye an impression of uniform spherical luminosity. It is only with opal glass of the lightest density that there is ever any visibility of source other than the outline filament effect due to the transluscent phenomena of opal glass for red rays. While, of course, the "spot of light" effect of ground glass diminishes as the distance from the source to the inner globe surface decreases, it is only when a small

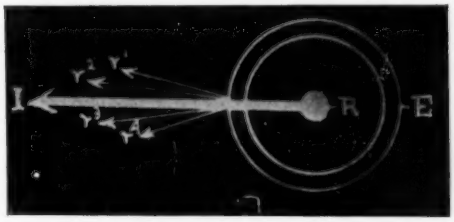



Figure 11.
The effect of an emergent ray through a ground glass globe.

source is placed in the center of a large ball, that the effect is much improved. Furthermore, ground glass is most frequently used on columns, and at heights where some useful light might be appreciated below. In such instances it is equally ugly and useless, the original distribution of the light source being practically unmodified. This is equally true of ground glass in other than spher-

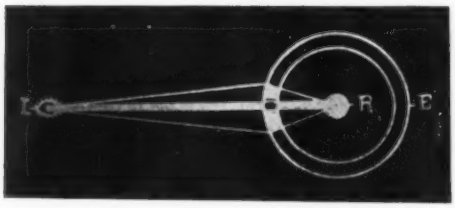



Figure 12.
A diagram showing the cause of the "spot of light" effect from a ground glass globe.

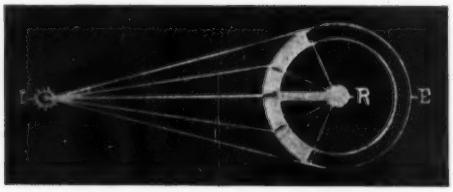



Figure 14.
A diagram illustrating the diffusion of light from an opal globe.

ical form. With an upright source, surrounded by ground glass forming the panels of a lantern, the same unmodification of useful light, and the same ugly "spot of light" obtains. It matters not how beautiful a lantern may appear by day if one turns away blinded by its glare at night, it then becomes an abomination, not an ornament.

Fig. 15 shows how light transmitted by opal glass tends to assume a distri-

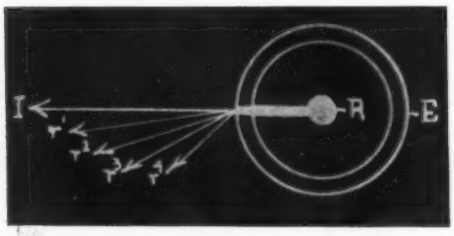



**Figure 13.**
A diagram showing the redirection of light by suspended particles of "opal" in opal glass.

bution symmetrical to the form of the glass. Fortunately all glass makers make opal as well as ground glass, and should be encouraged to turn out more of the former and less of the latter.

Regarding the re-direction of light, as accomplished by shades, this much over-rated detail of lighting has formed a perpetual bone of contention for wrangling manufacturers, "illuminating engineers," and others. One group of glassmakers started the ball rolling with the quaint claim that all light problems could be separated into three general classes, and universally solved by applying three shapes of shades, giving varied distribution of light. The architectural consideration of appearance was neglected, and Milton's lines—

"The other shape . . .
If shape it might be called, that shape had none,"

best describe the result.

But, why revoke the past? Experience is an excellent instructor, and those who then prescribed three remedies for all lighting ills, now recommend opal glassware of a type closely resembling the products of their erstwhile competitors.

Reverting momentarily to terminology, it should be borne in mind that the term "reflector" may only be used in designating an *opaque* semi-enclosing form, which does not *transmit* light.

The term "shade" may properly be used in describing semi-enclosing forms which are more or less translucent and consequently transmit, reflect, or diffuse light. The question is slightly irrelevant at this point, but the distinction is one which the designer should enforce in preparing lighting specifications (as la-

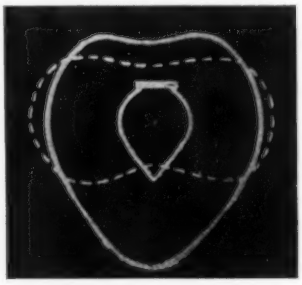


Figure 15.
A diagram showing that light transmitted through opal glass tends to assume the shape of the light source.

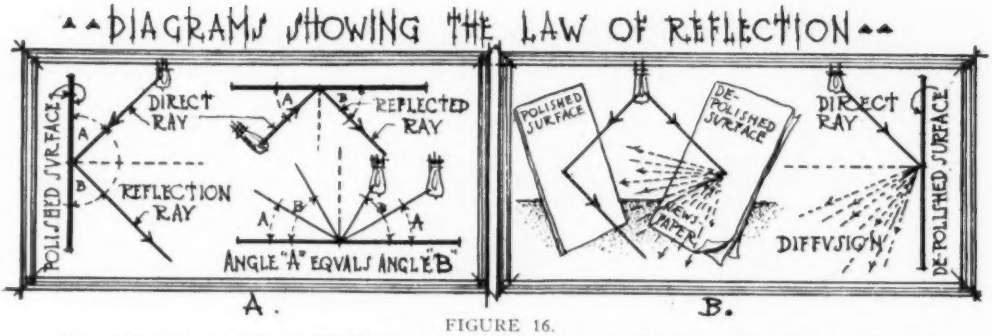



FIGURE 16.

Illustrations of the law of reflection: (A) Reflection from a polished surface—angle "A" equals angle "B"; (B) reflection from a depolished surface—the reflected ray is diffused.

ter indicated) for competing manufacturers' bids.

This question of diffused or reflected light is of great importance and, like most perfectly simple matters, has been either ignored or misunderstood, since the majority of lighting applications and appliances indicate an entire ignorance of its principles.

When light strikes an opaque surface one of two things happens—it is reflected or diffused. If the surface is polished, glazed, or smooth, be it of wood, glass, or whatsoever material, the incident ray will be sharply reflected, as indicated in Fig. 16 (A).

Most grammar school pupils have probably forgotten that the "angle of reflection equals the angle of incidence." If the surface is rough, or depolished, the incident ray is broken up and dissipated, Fig. 16 (B). (See also Fig. 17.)

Since the advent of high brilliancy illuminants, this neglected law has been demanding recognition. Horrible examples are to be found on all sides. The highly glazed reading page must be shifted so that the angle of reflected light does not enter the eye, causing glare. The depolished page of the newspaper, however, does not cause glare, since every ray incident to its rough surface is *diffused*, and no direct rays enter the eye. Practically all of our art gallery lighting is an example of light misused—the lights being placed in the wrong sort of reflectors which distribute the light unevenly (generally all at the top of the picture frame), or if they are placed some distance from the picture, the sharply reflected light from picture glass, or protruding particles of paint, causes so much glare that the observer is obliged to change his position continually in order to obtain even a general impression, to say nothing of the distortion in perspective caused by such lighting.*

What is true of reflected light from pictures in galleries is no less true of the unpleasant effect of light reflected from other surfaces, such as marble or painted walls. It must always be remembered that not only must a source be concealed, but its reflection also.

Fig. 18 shows how proper understanding of the critical angle protects the eye. Again the use of polished surfaces on sign boards gives the same effect—glare from sharply reflected light, rendering certain letters blurred and illegible (Fig. 19) when the

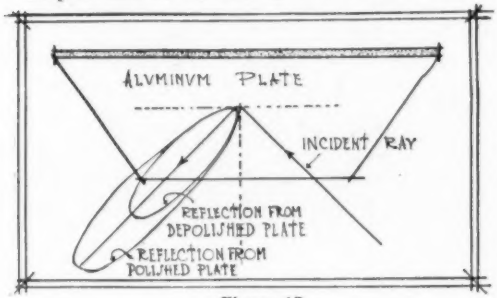



Figure 17.
The Law of Reflection.

*This subject will form the basis of a special discussion in later articles.

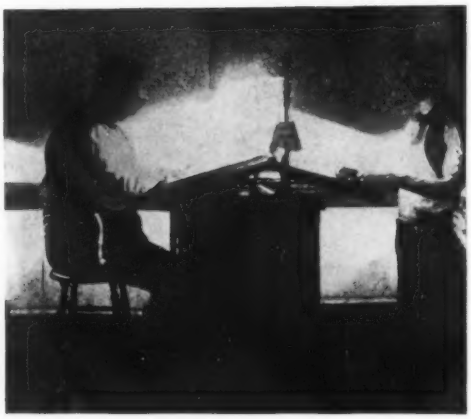


Figure 18.
A proper understanding of "the critical angle" saves the worker's eye.

observer's eye encounters the abruptly reflected ray. In the same way glare from the "white way lights" is reflected from the polished surface of the display window, causing a sheen, which obscures merchandise displayed within and renders any method of window lighting ineffective. Similarly, glare from glazed surfaces on cabinet work in windows, distracts from the effectiveness of the display, and ofttimes reveals, mirror-like, the location of ugly light sources, and their unattractive accessories—wiring and reflectors.

Now, as to the effect of diffusion and reflection in modifying the distribution of light sources: First as regards opaque reflectors—which do not transmit light. Referring to Fig. 20, it is evident that the horizontal rays of light from an illuminant within a reflecting surface will be re-directed by the reflective or diffusing action of that surface. If the surface is polished, they will be sharply reflected and the interior of the reflector will appear to the eye like the headlight of an automobile. Of course, reflectors of such types are not hung so that they are staring one in the face, but, on the other hand, the polished surfaces of tables and papers reveal their images with mirror-like fidelity—and its image will be equally so. These mirror-images of glaring reflectors are factors of great distraction in large offices devoted to clerical work. Hence the hanging of reflectors, or shades on drop cords so high that they are not within the visual field of seated workers, does not necessarily relieve their eyes from the danger and annoyance of mirror-like reproductions of glaring spots of light on polished working surfaces below. There is no reasonable excuse for this sort of thing, since all glass makers can furnish, upon demand, glassware interiorly depolished and free from glare.

Prismatic reflectors should never be placed within the visual field, unless interiorally depolished by acid treatment. In emphasizing this statement Dr. Percy W. Cobb, Physiologist for a group of tungsten lamp makers, states: "In the case of prismatic reflectors it is only when they are so far away that the eye is unable to distinguish their individual surfaces, and the media of the eye can themselves perform the necessary diffusion, that there is any reduction in intrinsic brilliancy significant for the pro-

Figure 19.
Lights in reflectors often cause brilliant spots of light to be reflected from the comparatively polished surface of billboards, etc.

tection of the eye." This fact has been repeatedly impressed upon glass makers, and many are now furnishing shades with inner treated surfaces, giving a pleasing diffusion of light. The treatment is nothing but a combination of sand blasting and acid etching, adding less than a quarter of a cent to the cost of each globe, and since all glass makers are in a position to apply it, there is no reason why they should advocate polished inner surfaces, particularly when such glassware is a menace to the eyesight. Of course, all lamp-tips, or inverted lamp chimneys, should be frosted, so that the lamp filament, or

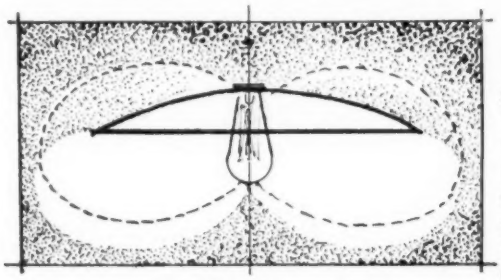
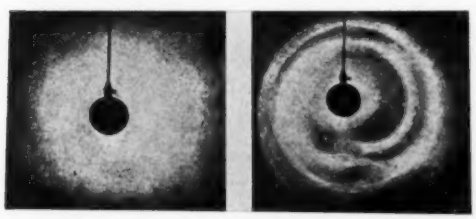


Figure 21.
Light source projecting below flat dish-shaped reflector. The broken line shows distribution without reflector.

gas mantle, is entirely concealed. The practice of allowing pendant lamps to project below flat or dish-like plates, should be avoided, since the source is exposed and the eye unprotected. Furthermore, if redirection of light is desired the re-directing surface must be placed well over the illuminant in order to intercept and re-direct its light rays. This cannot be accomplished when the lamp projects far below a flat, dish-like



A. B.

Figure 20.
(A) Effect of light from aluminum reflector with depolished surface.
(B) Effect of light from same with polished surface.

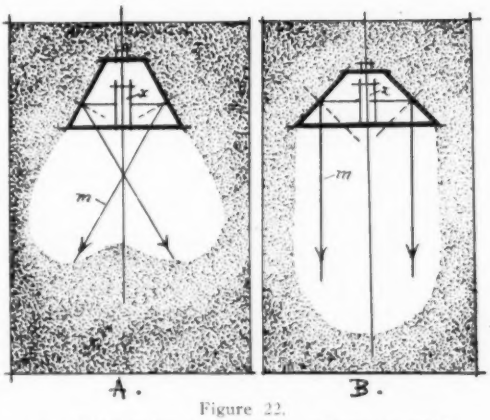



Figure 22.
(A) Distribution of light from reflector in which reflected rays are crossed.
(B) Distribution of light from reflector in which the incident rays are reflected directly downward.

shade (Fig. 21) which merely serves to cut off such light, as would be directed upwards, toward the ceiling in the case of an exposed (pendant) illuminant. Figure 22 illustrates the approximate reflection of light from a source (*x*) when placed as indicated in two different types of inside-polished re-

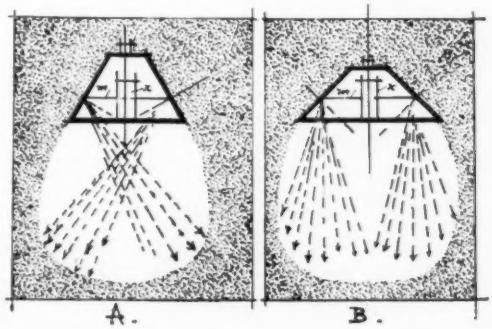



Figure 23.
Diffused reflection of reflected light from reflectors in Fig. 22, resultant from depolishing inner surfaces.

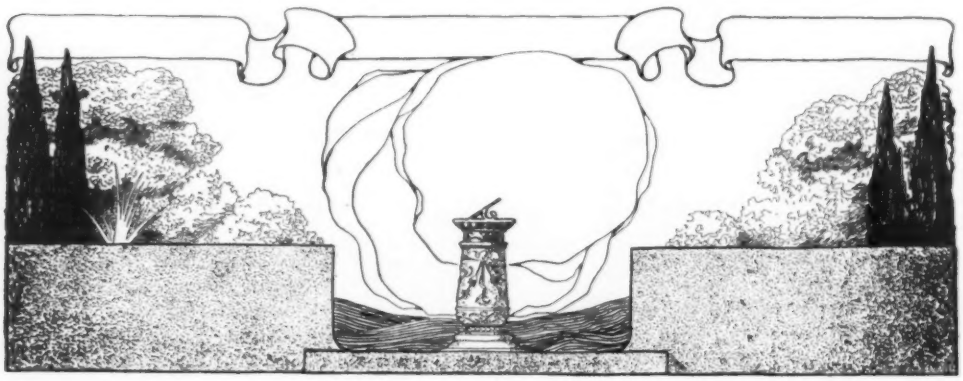
flectors. In A the sides of the reflector are so steep that the rays of light (*m*) from the source, glancing off at the angle of incidence, cross each other. In B the sides of the reflector, sloping at a lesser angle, are reflected directly downward. In figure 23 there is shown the more even distribution of light resulting from depolishing the reflecting surfaces of two reflectors similar in shape to those in

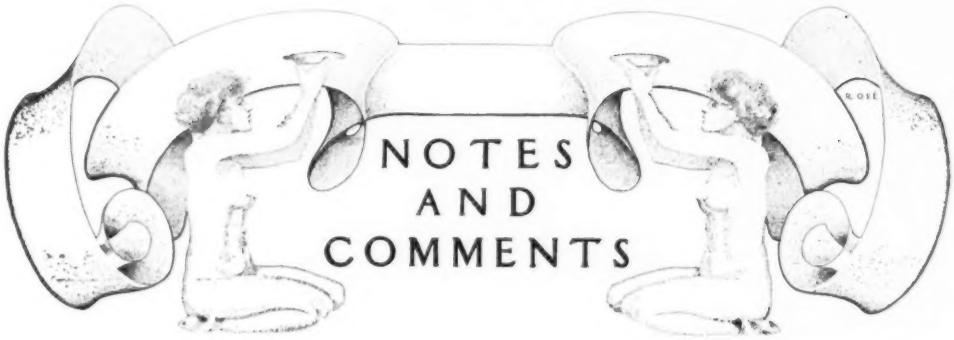
Figure 22, and with light-sources similarly placed. From an architectural viewpoint shades and reflectors may be classified under two general headings:

First.—Opaque and translucent re-directing surfaces which must be specially designed to produce necessary modifications in distribution, color and shadow, applied so that they are entirely concealed from view, within coves (for the avoidance of the "spotty effect" characteristic of such lighting), bowls, urns, pedestals, cornices, and above and behind skylights and frieze and griandole members. Here the quality of the reflecting surface, its permanency and requisite contour, are the points to be considered, its appearance, as it is (or should be) entirely concealed, being negligible.

Second. — Translucent, re-directing and transmitting surfaces which are exposed to view with re-direction to be accomplished without marring the outer surface of the glassware, of which the design should be left to the architect. By insisting on this point, and refusing to specify commonplace glassware, the architect can aid greatly in relieving the monotony of commercial lighting. Really progressive glass makers are pleased to prepare special moulds based on architectural designs for conformity with given interiors. It will be interesting to illustrate and discuss different types of reflectors and varied diffusing media in illuminating glassware best suited to different architectural schemes. So many points must be considered—source, direction, reflection and enclosing shades, not to speak of the design of the fixture accessory to the light, that too detailed or too careful a study cannot be made, if solutions of the lighting problem at once adequate and esthetic are desired.

Two factors must coöperate if an era of better lighting is to be effected—the architect and the manufacturer, the one to design understandingly and supply the esthetic element, and the other to produce understandingly and supply the practical element. More individualism and less commercialism would go far toward the reformation of this vastly important detail of architectural design, opening up limitless possibilities for practical and esthetic development. Returning to "technique," an artist requires a full palette of colors for his work, why must the architectural designer of a lighting scheme be limited in his choice to a few stereotyped patterns?






**The Responsibility of the Architect as Related to Sub-Contracts.**

Every architect expects and endeavors to obtain the best of materials and workmanship in his building operations (as a glance at any specification will show), but there are many reasons why he does not always get the result he desires. The proper completion of work means a great deal to the architect aside from his desire to see his ideas carried out. Future business from the same client, as well as from new clients, depends upon the care with which materials have been selected and applied as much as upon the design, although it is upon the latter that reputations are built. The design is safe, but a few years, perhaps months, may develop faulty materials and workmanship. In many cases this is "up to the architect" who has the power and the privilege to do all that can be done towards insuring his clients and himself against this contingency.

In these days when every building operation is a combination of sub-contracts many architects realize the importance of selecting competent sub-contractors but there are many more who leave this matter to chance or the discretion of the general contractor, which latter amounts to the same thing, in many cases.

When it is considered that contractors are in business for profit it is not surprising that many let sub-contracts to the lowest bidder, however irresponsible, if the architect approves or if he neglects to inform himself upon the reliability of the sub-bidder. It is a very easy matter to satisfy himself as to the ability of a concern to carry out the work in a thorough manner Any man will proclaim his fitness to execute work but if he is unknown to the architect the poorest way in the world to determine this is to entrust to him an important contract. The time to discover that a firm is incompetent is before the contract is let and this may be accomplished by conferring with architects on whose work the individual or firm has been employed or, better still, although it means more time spent, by inspecting the work itself.

Every architect has some standard for workmanship or materials that he has been in the habit of using, but where certain classes of work have not been included in his practice, he must either learn by his own experience or by the experience of others who are familiar with them. In either case he will eventually discover that there are good, bad and indifferent concerns in every business allied to architecture and will sift down his sub-bidders to those who are reliable and who will execute his work in a first-class manner. If he confines his invitations or approval to these concerns he has gone the greater part of the way towards the result that he desires and for which his client pays.

Dollars and cents, while important factors in most work, should not determine the award of any contract, general or other, and many low bidders are low because they have used bids from concerns that only the indifference of architects keeps in business.

It is clearly unfair to the first-class contractors to place them in the lists with others who are not able and do not intend to do their class of work. This is, however, an uneven contest that is being waged every day and the reputable firms are powerless to prevent it. Competition between equals is welcomed by all, and comparatively slight difference will be found in their estimates; therefore, when one bid is far below several of these, two things are certain—an error has been made or a different

class of work is contemplated. The good concerns cannot "knock" the others, but they know that a poor job will have more effect upon the architect than advice from them, and it is sometimes a consolation, for the loss of a contract to an inferior firm, to know that they will never compete in that office again, always provided that the architect is aware of the class of work they are capable of performing.

It cannot be expected that an architect be an expert in the varied lines of work that comes under his supervision, and, while many have acquired valuable knowledge of different materials by their frequent use, a large majority must rely upon their care in selecting the proper materials and firms to apply them. This is particularly true of special work, the component parts of which are produced and assembled by the concern to whom the contract is let, and which cannot be judged until the whole is complete or in place. It is on such work as this that the architect, to be safe, must employ people who can point to work of equal magnitude that has been well done, and whose reputation will not admit of poor execution.

To overcome the possibility of inferior workmanship and the consequent annoyances therefrom many architects make separate contracts for important parts of the building. This enables them to invite bids from good concerns only and this custom is growing in favor much to the relief of those who do only first-class work. This practice is a substantial help to the architect in another way. By the award of a contract to a responsible concern he saves the time and worry of closely following the progress of the work. Every architect knws firms or individuals to whom he can safely leave the details of sub-contracts without danger to the work or to his reputation. While all are in business for profit there are many who appreciate the value of work well done, even though at a loss due to an error in judgment or other cause, and the work does not suffer. The advantage of having a financially responsible contractor is apparent where it is found that the work must be executed at a loss. A good reputation is not to be risked in the saving of a few dollars. The architect, in many cases, never knows that a loss to the contractor has been the result of work well done. The contractor's profit is the confidence of the architect and the preservation of his own good name.

**The Boston Library Court.**

The future historical student who goes to Boston, is not likely to be satisfied with a visit to Bunker Hill. He will wish to see Copley Square—the battlefield of a generation, where has been waged many a fight involving artistic questions, and where canons of taste ceaselessly reverberate. There has been the fight over the building height restrictions; the excitement as to the Phillips Brooks' statue; the long-drawn-out siege with reference to the replanning of the Square; a skirmish as to the sculpture in front of the library; a rattle of musketry over the gay Bacchante, and now there is sharpshooting in regard to the development of the library's courtyard. This was precipitated by Roger Noble Burnham who, in an exhibition of his work this winter at the Copley Galleries, ventured to show a model for the development of the public library courtyard in the Italian manner. The scheme was generally spoken of as an Italian garden, but that was hardly accurate. It was also spoken of as a "fussy prettyfying of the great, silent, sequestered space." On the other hand, the friends of the project called attention to the courtyard's present condition, with its scrubby grass and prominent ventilator. The story was told of a foreign artist who had mounted the splendid stairs with an ever-increasing feeling of delight and enthusiasm, when the door of the landing invited him to a view of what he fully expected would be a charming scene. "He has not got over his disappointment in finding that the beautiful arcading served merely as a frame of a ventilator—that it contained neither the architecturally paved court, nor the garden of the Italian, but a patch of grass so uninviting that even a 'keep off' sign was not needed." Remembrance, also, is invited of the cortile of the Museo Civico at Palermo, where there is a combination of arcading and foliage, statuary and pool, which is very beautiful. Mr. Burnham's scheme calls for a pavement in two colors which correspond to the present color scheme of brick and stone in the cloisters and bays that flank the staircase, and for four statues symmetrically placed, and for a long pool with broken coping. But the critics of Mr. Burnham say that Mr. McKim desired to leave the court as simple and clear as possible, and that the gift of the little Bacchante was intended to settle the question.

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